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Product Spotlight Application

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Tandom scraps infant EXT on-line transaction system and unveils two en hanced low-end systems as replacements.

Symbolics shores up market lead with new low-end and mid-range LISP ma-chines. Paga 7.

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rtin Marietta Deta Syste quietly in mainframe software arena, es-tablishing integrated product line. Page

mid assemble puts pieces together af-ter New England interstate bank merger. Page 63. U.S. and Japan settle chip trade dis-pute. Page 99.

DEC 1986 earnings come in er than last year's. Page 102. e in 38% high-

puter is now favored to win the pole position in the 386 microprocessor sweepstakes, with a reported Sept. 9 introduction of a 32-bit system based on Intel's 80386 chip. Compaq is one of more than three dozen vend currently jockeying to get off the mark with a 386 machine in 1986.

in another key 386 der eral expert system software vendors have disclosed plans to port their LISP and Prolog versions to the 80386 micro and Protog versions to the constraint processor. Intel is hoping the announce-ments will boost implementation of its touted chip by bringing high-speed artifi---1 intelligence processing capabilities to

adopt Disoss

Fase-of-use features, peer communications lacking

Most recent releases of Distributed Office Support System connectivity products from IRM and minicomputer vendors are still faulted by users for lacking critical

to-peer communications and ease-ofuse features. These shortcomings have made users wary of adopting the document distribution software as the communications system in multivendor en-

The following items provide evidence of this development:
• Of 70 Fortune 1,000 companies recent-

ly surveyed by computer management con-sulting firm Forrester Research, Inc. in Cambridge, Mass., only 21.7% have already installed Disoss. Another 7.2% said they will install Disoss within the next six months, while 4.3% said they had already tried Disoss and thrown it out.

. IBM has withdrawn active support for 8100 and 5520 departmental processors the systems Disoss was originally designed to connect, in an apparent effort to have users move instead to System/36 installa

· Wang Laboratories, Inc. reports that there are currently fewer than two dozen production environment implementations of its Disoss product. Disoss is really only viable over the

long term as a common denominator to make Digital Equipment Corp., Data Gen-eral Corp., Wang and IBM systems talk," says Jean Hazelwood, senior product man ager for IBM Integration Products at Low-ell, Mass.-based Wang, "Right now, Disoss is difficult to install, its performance is not great and implementation usually requ a system upgrade. IBM is only gradually filling these holes See USERS page 6

Users slow to DG boosts low-end line. price of CEO

By James Connelly WESTBORO, Mass. — Employing the proprietary microprocessor nicknamed Mi-cro-Eagle for the first time, Data General Corp. last week announced a low-end mis computer that it will pit against the IBM System/36 and the Digital Equipment Corp. VAX 8200

But while boosting the performance figures for the low end of its product line with the MV/7800, DG also announced price hikes for almost half of its product line. The increases averaged 10% for software such as DG's Comprehensive Electronic Office and 6% for hardware The newest DG hardware products

such as the MV/20000 superminicomputer See DG page 4

Tandy clones target big firms

By Alan Alper
NEW YORK - Retail grant Tandy Corn. last week took the latest step in its multi pronged strategy to broaden its corporate ner base, introducing three aggressively priced IRM Personal Computer compatible systems. Tandy also recently exnded its corporate sales force by 40% and began offering volume discounts that, at the low end, exceed those of IBM. MIS departments at large corporations

are seeking products with more functions lity at costs lower than IBM's, Tandy Chairman John Roach said at a press con-ference last week. "Companies with See TANDY page 10

CW SPECIAL REPORT

Centrex deals: Users find PBX threats, pressure produce bargains

arge corporate com

users are discovering that the time is riper than ever for wringing major cost-saving concessions from local telephone companies. By threaten-ing to switch to private branch exchange systems, these users are resorting to something very like blackmail in order to force the divested local Bell operating companies to offer them attractive spe-

The local carriers, rather than risk losing university and business custom with installed bases of 10,000 or more telephone lines, have demonstrated th willingness to absorb access charges,

hold off on rate hikes and even install digital switches to order.
Industry experts caution MIS and tele

communications managers not to delay too long before nailing down favorable terms with their - preferably for deals lasting for an extended period such as the next five years. Today's good deals on Centrex rates and access charges may soon fall victim to regulatory pressure from the North American Tele-

communications Association a customer premise dor organization There are technical as well as final cial reasons for MIS putting the squeeze

on local telephone companies. Sor its are the only means by which ers can obtain the local telecom since switch technology and ser vice options vary greatly from one central office to another,

notes John Powers, vice-pres dent of strategic services at Dedham, Mass., consulting company Telecommunications Manage-ment Corp. "There are a lot of analog Centrexes still out there. and they just can't provide the same level of goodies available on a digital switch," Powers says. He

predicts by 1995, approximately See PRX nade 6



Lotus upgrade's compatibility lessens users' Release 2 anger

Release 2.01 of 1-2-3 targets 'critical issues'

Douglas Barnay CAMBRIDGE, Mass. — User read on to Release 2.01 of Lotus Develop nt Corp.'s 1-2-3 has been generall-sitive, according to an informa-

rvey by Computerworld last week e new release was designed to cool user anger aroused a year ago, when Lotus's Release 2 of 1-2-3 was and to be incompatible with the ginal version in some areas. Despite Release 2's enhanced mac-

capabilities and its capacity to ild larger spreadsheets, the comtibility problems prompted many Our response was not to upgrade wholeheartedly. Our tax department, wever, had a number of very hig adsheets, and we needed the extra memory management," said Greg Allman, a senior consultant for Dette Haskins & Sells, a New York-

ed accounting firm Lotus does not now guarantee to-1 compatibility between Release 2.01 and the original release, but a company spokesman said the newer release was a major improvement.

There is no claim here that what we have achieved is 100% compatibility," said Janet Logan, a Lotus spokeswoman. "We did extensive re-search on Release 2 and evaluated all of the feedback, and we think that 2.01 reflects the most important and the most critical issues

Although users praised Lotus's efforts to correct the incompatibilities many still resent the problems they faced in upgrading. "Under Lotus's 1-2-3 Release 2, there is additional information stored with the data in a work sheet file. When you run Release 2, it can read a file created un der Release IA into memory, hot when you go to save the file, a mes sage goes op on the screen saying.
'You are about to save this flie as a
WKI file, rather than as a WKS
file,' said Michael Selva, PC Coordinator for Spaulding Hospital in Bos-ton. "I just wish they had kept the same file structure

The key to the greater comp which costs users \$15, is having labels in work sheets equal zero when used in a mixed formula reference That is mainly an issue when people are using Lotus as a data base, where you need to do a day-to-day count or an average of some objects that are in a column or a row. If those objects are character strings, then you are going to run into problems," Selva said. "If people had developed very elaborate macros using the old Lotus me of those marros would crash

Another problem with Release 2 as the program's speed. "Large anouser process with science 2 was the program's apeed. "Large spreadsheets take longer to retrieve in Lotus Release 2 than they did in IA, which made no sense. A spreadsheet that would take five minutes to sheet that would take five minutes to load from 1A would now take from 15 to 20 minutes in Release 2. That was our major problem, "said BIC Sulffield, information center analyst with Eaton Corp. Lotus claims to have addressed that problem with

Another problem was created be rause Belease 2 needs an extra 848 RAM) compared with Release 1A Applications written for 1-2-3 that require nearly 640K bytes of RAM now need an expanded memory device that allows users to access more than 640K bytes, said Van Barletta manager of tax computer services for Arthur Andersen & Co. in New York. For some, this is not a major prof m. "I've been steering people away

from doing huge, huge applications in Lotus," Selva said. In Lotus," Selva said.

Nor is It a major problem for Arthur Andersen, which had held back
on upgrading to Belease 2 because of
its compatibility problems and will
now upgrade to Belease 2.01, according to Barletta. Arthur Andersen, was one of the most vocal critics of Release 2. More than 1,000 packages will now be upgraded.

"I think we are well pleased with what it fixes," said Danielle Barr, vice-president of corporate systems for the Bank of New England Corp. in Boston. Release 2.01 loads faster, in stalls more easily and no longer reires a key disk, according to Bill Jennings, office systems analyst, who is evaluating the product for the Bank of New England. "This release contains some smaller improvements

that I am sure were to fix some errors in the huge change from Release 1A to Release 2," Eaton's Caulfield said. Although Lotus is charging \$15 for the release, large-volume buyers may receive the product free. "We would probably have to distribute them here, but they would supply them to us for free. That is my best guess,"

800-343-6474

Deloitte's Allman said

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Tandem broadens low end with two EXTs

Machines offer more power, expandability

Juffry Booler CUPERTINO, Calif. — Tan CUPERTINO, Calif. — Tandem Computers, Inc. last week prematurely retired its Nonstop EXT on-line transaction processing system less than 18 months after its introduction. Tandem replaced the EXT with two upgrades, the EXT10 and EXT25, that address the original system. tem's growth and performa

comings and broaden the low end of Tandem's product line. The new systems, targeted at com-unies seeking to decentralize on-line ensaction processing activities, re-reedly offer customers, price and performance improvements. w systems are reputed to run the me operating system and applica-

arply from their predecessor in tice and raw computing power. The EXT10 and EXT25 form the centerpiece of a product announce-ment that also includes the following

o elements: • The Model 6150 com controller, which on one board inte-grates three kinds of device support

that with the original EXT require ree boards.
• The Model 6526 terminal, which

costa roughly 50% less than Tan-dem's existing Model 6530 display unit and offers basically the same

Although the EXT10 and EXT25 re reputed to run exactly the same perating system and applications as se processor they supplant, the two achines differ sharply from their predecessor in price and raw comput-ing power. Capable of executing 4.3 transactions per second, a basic EXT10 provides roughly the same

computing power as a comparable EXT but costs about 30% less, accord-ing to Terry Retford, Tandem's manager of processor and memory prod

With its 11 throughput rating, by contrast, an entry-level EXT25 out-performs a minimally configured EXT by a factor of 2.5 and is priced proportionally

The EXT25 owes its performance edge over the EXT10 to its superior chine cycle time and to its use of a 64K-byte cache memory, which the smaller processor lacks, he added pared with the EXT10, which s a machine cycle every 100 c, the EXT25 is rated at 83.3 nsec With a footprint of 8.3 square feet, upled with the machines' ability to

EXT10 and EXT25 are targeted at

EXTIO and EXTES are targeted at the remote locations of large corpora-tions, according to Retford. Tandem's first effort to crack the distributed processing arena began in April 1985, when the company an-nounced its original EXT. But the processor's limited expandability created more user resistance to the EXT than its manufacturer apparent-ly expected, according to Omri Serlin, head of Mountain View, Calif.-based ltom international, Inc., which tracks the on-line transaction processor marketplace

For some of our clients, the concern with the existing EXT was that it was a closed-end system," said a odoet manager for a herastest user that develops funds-transfer soft ware for banks. "If our customers acquired other banks or if their vol-umes grew significantly, they could sily outgrow their systems." Even the smaller EXT10 affords

upgrade path for the existing T. "Thus far, our EXT10 has operated even faster than we had initially expected," the source at the beta-ta

In addition to relieving the EXT family's horsepower restrictions, the announcement also lowers Tandem's entry-level price barrier. "With the EXT10, Tandem is trying to extend its product line so that its See EXT page 6

DG boosts its low-end line

From page 1

and the MV/2000DC min and the MV/2000DC minicomputer, are unaffected by the hikes. The price of the older MV/10000 rose al-most 22% to \$167,100, where it stood before prices were slashed in conjunction with the MV/20000 an

The MV/7800 is based on the cus-tom very large-scale integration (VLSI)-based Micro-Eagle, which was veloped in DG's Sunnyvale, Calif., facilities and provides minicomputer CPU functions in a six-chip set. The MV/7800 is positioned above the MV/

The MV/7800 supports 25% more

erate outside a computer room, the office automation users and provides a performance increase of greate than 50% at two-thirds the price of the 2-year-old MV/4000, according to DG. The MV/4000 remains available. DG credited the Micro-Eagle chip

with the performance boosts. The system has a machine cycle time of 320 nsec, which is slower than both the MV/2000DC and the MV/4000. However, Bill Duckett, DG manager of integrated systems, said the

er of integrated systems, said the overall system performance is faster than that of the other machines. "When you do custom VLSI, you can do little things like putting bits of memory right on the CPU chip,"

Compared to systems from IBN our MV/7800 offers 32-bit perforunce at the same price as the less erfui 16-bit System/36 Model 5360. Compared to systems from Dig-

Control and protect and in Proceedings to Manual and American Conference (MICA) (Conference (MICA) Conference (MICA) (Conference (MICA) Conference (MICA) CO

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Ital, the MV/7800 supports more of-fice automation users than the VAX 8200 at a lower cost of ownership," claimed Prank Pinto, director of DG's Marketing Support Division. DG officials said the MV/7800 sup-

ports 50 users in a typical office automation environment running clerical tasks, professional support, word processing and spreadsheet.
They said the system handles slightly more than one million single-preciiy more than one mission single-proc-sions Whetstone instructions per sec-ond. The MV/4000 supports about 40 OA users, according to the company. The MV/7800 is available in three

configurations: a commercial version costs \$27,500 with 4M bytes of mem-ory: a rack-mount version costs ory; a rack-mount version costs \$19,050; and an upgrade version costs \$10,000 to \$17,500, depending on the model being upgraded. Mooth-ly maintenance for the commercial system costs \$120.

bytes of memory, 14 1/0 slots, 9.4G bytes of disk storage and 128 termi-nals and printers. Explaining the price increases for the MV/10000, MV/8000 II and oth

Explaining the price licensess for products, a congreg specimen and these are a restoration of cuts made and specimen to management and a specimen to management to the congregation of th

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anies interviewed for For r's report gave four major rea ns for not choosing to implement sons. One, they did not need the Disons. One, they did not need the product. Two, they were put off by Disons'a "poor reputation." Three, they could not cost-justify imple-menting it. And four, they did not "Delieve in a mainframe-based office automation architecture" and were nting another vendor's peer

to-peer network.
While offering Disoss connectivity
has not helped minicomputer venhas "kept them from being locked out of customer premises," according to Forrester research manager John Mc-Carthy. "Just knowing that the Dis oss link is available may prevent a company with a large IBM installation from dishipsing a third-party dor out of hand - even if it even

use the link rare ly or not at all. For example, Texaco Canada, Inc.'s Nanticoke Refinery in Ontario knew that a Discos link was a

prerequisite for its proposed im-plementation of Corp.'s Compre Elec-Office

always get - from different vendors' Disoss products. office atioo system. were using Data General computers for process control, laboratory information processing and materials re-source planning systems," says Tony

Abraham, chief engineer of systems at the refinery. "It made sense to use

CEO as a way to link refinery opera

and thought it was a great tool for administrative and decision support,

The refinery wanted to replace its current OA system, an IBM 8100, with a DG MV 10000. "But we still eded to communicate with \$100s throughout the rest of the company, and for that we needed Disoss, which is standard here," Abraham says. "Management wouldn't have let us

puter, for inget CEO otherwise In June 1986, Nanticoke became a stance, can only est site for DG's new Disoss link, CEO Document Exchange Architecments m (DXA) (noneditable)

Abraham says users appreciate dealing with the menu-driven CEO interface rather than with Diso "which is really cranky. You have to fill in a lot of blanks before you can send something." Abraham also praises CEO DXA's distributed archi-Abraham also ure, which allows him to access ocuments and messages right at his orkstation. "With IBM's Discus, the secretary at the head office woul send a document to my secretary's

8100, and she would have to print it

Distributed

networking is only

one of several

features that users

want - and do not

periodically queout for me Nanticoke has ry o Disoss host been testing each ing mail. Third-party CEO DXA as DG brings it out. DG dors' Disoss implementations all sufstill does not offer from one or more of the above a Systems limitations. Wang, for example, has yet to set a release date for a Disoss gateway that supports SNADS/ Network Architecture Distribu-LU2.1. And systems running its cur-(SNADS)/LU6.2 rent Disoss release cannot receive mail directly but must use a mailbox on Disoss that on a designated Disoss host.

DEC's Disoss product, External will allow peer-

to-peer com

nications without the need to go through a Disoss That will be Version 3; we'll try it out when they release it," Abraha "We'll need it when we implement CEO in another Canada refin-ery — which should happen as soon as oil prices allow." Peer-to-peer

on top of Disces

Distributed networking is only one of several features that users want - and do not always get - from difrent vendors' Disoss products. Wang's Hazelwood points out that

(Disc

eliminates

shortcoming.)

Some IBM com

Displaywriter.

nsmissions di-

able form. A SNADS/LU6.2 imp

mentation has been announced but

not yet delivered. And Microvaxes, like IBM Displaywriters and Wang

ments directly but must access a Dis

oss host system for their mail.

Chase Manhattan Corp. is curren

systems, cannot yet receive d

rectly but must

offer the same level of support to all IBM sysems. The 3270

M Disoes les Com in final which should be available shortreportedly puters, such as

rent backbone for transm transparent backtone for transparent ting documents and messages" among an extensive installation of DEC, Wang and IBM equipment, says Craig Goldman, vice-president of Chase consulting and end-user sup-"We're think

ing of letting All-In-1, Wang users Wang Office, IBM and all have Disoss as the common con nection." currently mull ing over Disoss presentations that were recent

ly given at the bank by DEC, IBM and Wang. His group is us-ing the following criteria to evalu ate the different products · Peer-to-peer communications

among all three vendors' systems · The capability of preserving current user interfaces on each type of system. "I don't think we can survive if we have t - add the burden of

special command keys," Hidden costs. "There will no doubt be software development work to achieve true transparency, as well as training costs," Goldman says. The level of resources needed to support the new system. For examnent Exchange, supports revisple, user processors may need to be able and final-form library access but does not yet distribute mail in revisupgraded lo order to support direc Adding All-In-1

upgraded to order to support direct mail distribution. Adding All-In-1 might require a VAX upgrade. "We believe we'll go with all three vendors; now we're discussing com-munciations strategies," Goldman says. "We have decided that even if the software is not all there now, in a year, it will be sufficient to lessen



EXTs broaden Tandem low end

From page 4

current customers can reach out fur-ther into their outlying offices," said Kimbali Brown, an analyst with Da-taquest, Inc., a San Jose, Calif.-based

arket research firm.
A basic EXT10 and EXT25 config A basic EXT10 and EXT25 config-uration consists of one system cabi-net that holds two processors and up to four 128M-byte disk untils. Main memory capacity ranges from 8M to 16M bytes for a two-processor EXT10 and from 16M to 32M bytes for a comparable EXT25. To create a maximum EXT10 or EXT25 configuration, users have to

EXT2S configuration, users have to add a second system enclosure. Pully expanded, the two modules reported by execute 8.3 and 22 transactions per ascond, respectively. A two-processor EXT10 and a similarly configured EXT25 cost 882,500 and 8325,000, respectively. The Model 6105 communications controller el 6105 communications controlle costa \$5,455, the Model 6526 termi

TOP OF THE NEWS

NEWS from page 1 cheaper desktop systems. Companies joining joining in last noement and their products are Franz, Inc., Alameda, Calif., offering fall availability of Calif., offering fall availability of an Extended Common LiSP pro-gramming environment for the Unix System V/386; Artly Corp., Concord, Mass., Prolog for the Unix System V/386, early 1987; Lucid Software Corp., Menlo Park, Calif., Common LiSP on Unix Sys-tem V/386, early 1987; Gold Hill: Computers, Inc., Cambridge, Mass., Golden Common LISP for PC-DOS, late 1986, for Unix Sys-

tem V systems, early 1987. Other companies wrapping up eals with Intel at press time were and Quintis

Teknowledge, Inc. ar Computer Systems, Inc. Analysts agreed the Intel an-uncement opens the door for low-end implementation of Al applications, but stressed that it could be years before expert systems make their way to the end

'Intel's pressure now is not to the end user; it's to developers said analyst Bob Lefkowits from Informer.

nal Advanced Systems reportedly will try to counter IBM's attack on the high-end scientific and engineering market this week. The Mountain View, Calif.-based ufacturer of IBM plug-comp ible mainframes is expected to an-nounce a hardware and software package for its AS/XL series of mainframes, answering IBM's addition last October of a vector processing facility to its 3090 main-

Ashton-Tate will follow on the hoole of Lotus in announcing its own site licensing program on Aug. 19, according to software instry sources. Unlike the Lotus plan, which is scheduled for an Aug. 13 unveiling, Ashton-Tate's plan will allow corporate buyers to continue negotiating volume

Meanwhile on Aug. 11. Ash Tate will team up with Apple Com-puter to Introduce a Macintosh sion of Dbase III.

The 32-bit workstation market will heat up with tomorrow's an-nouncement by Sun Microsystems of the latest members of its Sun/3 line. The principal release is ex-pected to be a color version of pected to be a color version of Sun's low-end 3/50 system, priced in the \$12,000 to \$13,000 range. One analyst says the low-end color system is Sun's belated re-sponse to A pollo Computer's popu-lar Series 3000 Color Personal Workstattion, priced some \$2,000 higher at \$14,900. "The Series

3000 has been a major success and a real sore point for Sun," the ana-

Symbolics rolls out AI machines, cuts prices

By Eddy Goldberg BOSTON — In a move to stay ahead of growing competition among symbolic processing systems ven rs, market leader Symbolics, Inc.

last week announced two processors, one entry level and one middle range. The systems, used in creating artif rial intelligence applications, will effectively replace three-quarters of Symbolics' 3600 development family. They reportedly offer improvements in such areas as software prototyp

ing and programmer productivity. Symbolics also announced a systems software access control package and price 24% to 31% on its 3640, 3645 and 3670 systems, which will be discon-

line 3675 has been cut 8% to 9% are expected strengthen Symbolics' position by consolidating its product line and making the evolution from low-end to

high-end systems easier and more attractive for customers, according to Harvey Newquist, editor of "Al Trends," a newsletter based in Phoe "It also starts bringing their costs more into line with the general trends of the industry." he added.

The announcement gives Symbolies "a strong competitive position vis-a-vis traditional hardware ven-durs," such as Digital Equipment Corp., IBM and Sun Microsystems,

Inc. said Cart Monesh, senior vice president at Paine Webber, Inc. President Noftsker said the systems, the 3620 gate-array CMOS technology, intro duced in April [CW, April 21].

and 3650, are based on proprietary The 3620, designed for entry-level development projects, offers 20% greater processing speed, yet it is 25% the size of the 3640, which it is replacing. A minimum configuration is priced at \$49,900 with a 190Mbyte disk and 4M bytes of main mem-ory. The 3650 is 40% faster than the 3670 but only half the size. It com standard with a 368M-byte disk and costs \$65,900 with 4M bytes of main memory. They are available now

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PBX threats produce bargains

70% of all central office switch 70% of all central or inc. will be digital. "In the me restomers have to blacks

cal telcos, saying. 'If you don't up-grade to digital, I'll go privats.' " Business MIS managers could ta a lesson in Centrex wheeling and dealing from the big universities, many of which have installations of 14,000 lines or more in complexes of hundreds of buildings over thou-

eds of acres. The University of Missouri in Co. obia, with an installed base of 12,000 lines, is a case in point. The ol was a dissatisfied user of Cen trey 8311 from independent tele trex 8311 from independent une-phone company GTE Co., an "outdat ed system which has been in use since the 1970s," according to telenmunications manager Beverly ickwell. "It offers call transfer and direct in-dialing, but no accouning or other enhanced features."

In May 1985, the university put out a request for proposal (RFP) for a new telecommunications system. "We thought we were going to go with a PBX — that's how we de-signed our RFP. But we wanted to let GTE take their best shot. What they came up with was basically a Centrex proposal and yet better than any of the CPE vendors' offers," Blackwell reports.

Under the terms of the universi

ty's new contract, signed last Ja ary, GTE is installing a DMS 100 rh in its c cally to serve a portion of the Columbia campus. GTE retains ownership of the DMS host and serves other rs with whatever capacity

siversity does not use. The good deal is that, even ugh GTE owns, manages and ains the switch, we are esse tially buying the part we use well says. At the end of five years the university will be "neid up," and

cease paying access charges. The rest of the campus will be served by three remote switching centers, "which we need because we are so spread out," Blackwell notes. The university owns these switches, as well as the optical-fiber and coaxi al cable that connects campus build "The advantage of owning the equipment is that we have control and can do our own changes," Black-well claims. "Meanwhile, GTE is managing and maintaining the basic voters."

sing a favored o

The university's RFP acted as a spur for GTE to think up ways and u to please a favored cu "We were very optimistic about get-ting a good deal with them, since we are their largest custo tion." Blackwell says.

Now is an ideal time for other large organizations to duplicate the University of Missouri's coup, notes Richard Kuehn, president of Cleve-

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of it. That was still in postdivesti-ture days when AT&T could tell the R-II operating companies, "force up Bell operating companies, 'force up Centrex rates so that users will be forced to buy Dimension PBXs.' Dibled the former Be nies to do their own thing, a y want to hold on to their in ey want to noid on to their in-alled Centrex base," Kuchn says. Not all customers are finding the

divested Bell operating companies to be pushovers, however. A year ago, Pacific Northwest Bell refused to renew a Centrex rate stabilizaagreement with Washington Trust Bank in Spokane, Wash. As a cons-

nd consulting firm RAK Associates "Five or six years ago, I told us-, "Centrex is a dead issue. Get out

lation prize, the bank obtained a "Corecom" agreement under which It would pay for local access to outside lines but not for such enhanced features as call-forwarding and call

The bank opted to stay with its Centrex services, despite a consul-tant's assurances that a PBX system would be less expensive, notes Assis tant Vice-President of Central Ser-vices Gary Miller. One major reason was that the bank was on the verge of closing and relocating several of its branch offices and concluded it suld be easier to reconfigure its

Centrex services than to take dow and/or install new PBX systems. ther factor that may tie a com pany to Centrex is the size of its user population. "For a company like us, with 4,000 lines, a PBX is not really a consideration," said Joyce Varley,

lead communications analyst with Fidelity Bank in Philadelphia. Pidelity currently uses Centrex services at six Bell of Pennsylvania central offices - one serving the bank's headquarters, the other five rving branch offices. The bank is in the third year of a five-year ratefreeze agreement with the local car

But the increasing number of small companies signing up for Cen-trex is being more than offset by a wing number of Fortune 1,000 corporations switching to PBXs, claims Northern Business infort ness inform tion. Inc. telecommunications ana-

A recent report by the New York research firm states the total Cen trey installed base increased by only about 10,000 lines in 1985 and by 50,000 lines in 1986. In contrast PBX installations increased by 2.1 million lines in 1985, and by an esti-mated 2.28 million in 1986.

etting the trend The divested Bell operating cor

nies are currently trying to comat this trend in two ways. One is by offering enhance Centrex systems closer to PBX func-tionality in both voice and data com

"The ability of a central office to allow the organization to use existing wiring for data can be a major factor in the decision to stay with Centrex or change to a PBX," says University of Nebraska Director of Telecommunications Services Ruth Michalecki. "Once a company decides to go to the trouble of rewiring a group of buildings for data trans ion, it often takes that extra step and installs a PBX — which also

ires new wiring. The university is currently w isfied with a packet-switch

ent Lincoln Telephone and Tel graph Co. The service provides 9.6K bit/sec. transmission among different computers on campus on the same wiring that carries Centrex

same wiring that carries com-voice transmissions. Lincoln Telephone has also indi-cated its willingness to add a DMS 100 digital switch to the central of-tion the university. "The analot switch we have now is 10 years old, and the manufacturer no longer supports it with new software deve

The second way local telephone companies seek to hold on to Centres omers is through rate freezes and by "eating" the expense of booking customers up to long-distance carriers. But they — and their cus-- may be denied this opti If NATA has its way. In the last year and a half the CPE vendor organization has filed complaints with the Federal Communications Commis sion against divested Bell operating

mpanies' rate-setting policies. NATA alleges that at least 12 local carriers, by absorbing access charges and offering other rate breaks to Centrex customers, are "incres Centrex market share through dis criminatory pricing at the exper the CPE provider," according to ert Aldridge, attorney at NATA's general counsel, Wood, Lucksing and Epstein, NATA contends CPE dors are "finding it harder and harder to make a profit because they must set prices to compete against a subsidized telephone offering

The vendor organization also claims that other local telephone cus tomers are being forced to subsidize the Centrex service on the basis of the fact that "Centrex rates are un realistically low," Aldridge notes

Barbara Wheeler, Centrex produ anager for Bell Atlantic Corp., admits the rate-setting controversy is "looming on the horizon" and that the decisions of state Public Utility ssions are likely to determ the future price competitiveness of

different divested operating compa nies' Centrex offerings. The issue of customer access charges must be settled soon; eur tomers with 14,000 lines can't live with the threat of having to pay \$6 per station access charges - which

is a typical rate," the University of raska's Michalecki says Bell companies are eating that charge now for some of their cus ers — but no one knows how long the situation will continue. The Pub

tic Utility Com along and say, 'You will charge that uch money."

Kuehn of RAK elaborates, "A rate

stabilization contract only assures the customer that the local telephone company will not initiate a rate in-crease. It does not stop the Public Service Commission from doing it. I think the longer the rate stabiliza-tion period, the more likely it is that at some point the Public Service Commission will say, 'We can't keep raising resident rates and leave out this business or that university

As protection against this future threat, Kuehn has recome his clients request that their Centrex contracts include a clause that lets them cancel the service without per alty if the Public Service Commissio or PCC raises rates. "Some Bell con panies have agreed to do this

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Tandy clones target big firms

people evaluating PCs are more conpeople evaluating PCs are more con-cerned with value than ever. FUD — fear, uncertainty and doubt of not buying from IBM — is not as big an issue," Roach said.

Analysts generally applauded Tandy's strategy, noting that large corporations would be more inclined to buy from Tandy than from other clone makers because of the company's financial resources and nine-year track record in the PC business. In particular, the firm's creation of a rated sales force outside its Ra-

dio Shack Corp. outlets was lauded Thomas Wong, an analyst with Eberstadt Flemming & Co. in New York, said he believes Tandy has a good chance to penetrate the large corporate environment. "Corpora-tions are looking at ciones, and Tandy has the products and support to be a viable competitor," he said. "It's just a question of initial costs to staff up and how long it will take them to penetrate the market.

The new business-oriented micros range from the Tandy 1000 SX, said to run twice as fast as the IBM PC and retailing for \$1,199; the 3000 HL. an Intel Corp. 80286 machine aimed at the Personal Computer XT market and selling for \$1,699 in a floppybased version without a monitor; and

the 3000 HD, a 40M-byte hard disk version of the firm's Personal Com-puter AT-compatible Model 3000, priced at \$4,299

At a press conference at the Wal dorf Astoria, Roach stressed that Tandy's new PC-compatible comput-ers are part of the firm's attempt to en its focus to include Fortune 1,000 users, a strategy that has ined increasing its outride sale ece by 40% during the last four

id, is to provide ncher feature set at cost than IBM and other clone He stated "1985 is the year PC-compatible people focus on val-

tempt to broade ue. Offering only PC clude Fortune 1,000 users compatibility is nger state of the Tandy's Business Products Division vice-president, said a number of large corporations have recently signed

tracts to purchase Tandy micro-nputers, although he declined to ntify those companies. He did, however, point to a recen study done by the Gartner Group, Inc. of Stamford, Conn., that ranked Tandy behind IBM as the second largest supplier of microcomputers to companies with sales of less than \$500 million. Although Tandy's 22% of the market measured well below IBM's estimated 45% of the market,

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its new products, sold through a bet ter trained, 1,500-member outside sales force, should help close the gap.

Other analysts believe Tandy, like other PC clone vendors, is caught in a bind. The firm is viewed as a lesser alternative to IBM despite offering better price/performance than Big

"MIS guys will give any excuse to buy from IBM rather than anyone else," noted Steve Bosley, an analyst Dats Corp. (IDC) in Framingham, Mass.

"I'd be real surpris Tandy's new PC-compatible comif Tandy was suc-cessful selling to large corporations." While Tandy has uters are part of the firm's atestablished a solid reputation in capturing small business ac-

> ca, Bosley contends the firm has been hard-pressed to attract corporate users. "They sold 154,000 units to busi-ness professional users last year, which represented 5.7% of the mar-ket," Bosley said. "They have a lot of people to climb to get to the top." Tandy recently put its outside

> ales force on commission and began offering volume discounts that the low end, exceed IBM's, "We offer discounts ranging from 12% to 30%, depending on quantity," Stegall said. It's like the analogy: If Muhammad won't go to the mountain, then the mountain has to come to Muhamnoted Joseph Levy, a spokes-

man for IDC es of the Model 3000

The Model 3000 HL features an Intel Corp. 80286 microprocessor oper-ating at 4 or 8 MHz, supporting Microsoft Corp. MS-DOS 3.2, 512K bytes of random-access memory (RAM), a 360K-byte floppy disk and seven ex-pansion slots, four PC XT slots and three PC 16-bit slots, the firm noted Options includes a choice of 1.2M byte floppy and 20M- or 40M-byte hard disk drives. It, too, can attach to

Vianet, Tandy's PC cluster network, Tandy said The 40M-byte hard disk version of the 3000 HD includes 640K bytes of RAM and supports both MS-DOS 3.2 and Microsoft's soon-to-be-released Xenix 5.0. Under Xenix, up to six un-

Tandy 3000, the firm said. The 3000 HD comes with 10M bytes of additional storage, 126K bytes of additional RAM and greater expandability than the PC AT, Tandy said. Ten expansion slots are offered accommodating seven PC AT cards two PC XT cards and one PC XT half

The Model 1000 SX is an Intel 8088-based machine, running most MS-DOS-compatible software at 7.16 MHz, software switchable to 4.77 MHz, Tandy said. It is offered with a new version of Personal Deskmate an integrated program combining ba rd processing, nic filing, graph ng. spread

The 1000 SX comes with 384K bytes of RAM, expandable to 6409 bytes of RAM on the motherboard dual, double-density, double-sided 360%-byte 5.44-in. floppy disk drives; and five expansion slots, with a sock-et for an 8087 coprocessor. It is of-

rallel printer, two joysticks, a ligi n, monochrome monitor, comp leo and sudio and color mon The base price of \$1,199 includes a The micro can attach to Vianet as well as to IBM's PC Network local-

Models 1000 SX and 3000 HL re-place Models 1200 and 2000, respec-tively, which are being discontinued, Tandy said. The firm said it is al ready sold out of the Model 2000, although limited quantities of the Mod-

el 1200 remain Three new printers include a 20 char./sec. daisywheel printer, priced at \$389.95; a 43 char./sec. daisywheel priced at \$995; and a dot matrix printer, operating at 240 and 80 char./sec., priced at \$1,295, which the company is positioning as an en-try-level desktop publishing unit.



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IBM hints at price cuts, enhancements to boost 3090 sales

Big Blue says moves likely in September

pect enhancements or price cuts month that could boost the price/performance ratings of 3090 mainframes and drive users from the older 3080 mainframe family to the

According to industry observers, IBM representatives have told some customers that the company plans to effectively kill the 3080 as a market force by making the 3090 more attractive to customers who have nostponed purchase decisions while watching for a clearer price/performance difference between the two product lines

However, there is no consensus about whether price cuts or enhance-ments would sufficiently spur 3090 es to boost IBM profits or about

the size of any price cuts. rtly after the first 3090 Model 200s were shipped last September that there were too few features in the 3090s to set them apart from the older 3080s, which are available primarily on the used market or as updes. Some of the speculation has tered on the possibility that 3090 ted through the addition of more processors or

substitution of more powerful CPU boards. The anticipated September price

cut would be the second of the year for the 3090s. The prices for the mul-tiple-CPU 3090 Models 200 and 400 were slashed by 10% in February. owever, one IBM executive, who ked to remain anonymous, recently sted that because of those earlier outs, third-quarter performance enents are more likely than a

cond round of price cuts One industry observer, Robert A Bardagy, senior vice-president of marketing for Condisco, Inc., com-mented, There have been rumors for site some time that there will be a 3090 price cut sometime between now and year's end. That would fit in with IBM's tradition of cutting prices in Sentember The other side of the min is that a 5% 10% or 12% out is not enough to stimulate demand by tself." Comdisco leases IBM main frames and is active in selling used

3080s in the third-party market. st people are just not buying

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Analyst Francia Gens, a vice-presi-dent with International Data Corp., a Framingham. Mass.-based market research firm, reported that even if what IBM is telling its customers out a September announcement is true, the sluggishness of the 3090 market cannot be blamed on the com-petition from used 3080s. "Our surveva show that not that many people

are going to used 3080s instead of 3090s and that the lack of differentiation isn't a big issue. Most people just not buying." Bardagy said 3090 enhance

make more sense than price cuts if IBM's goal is to maintain its profit margin for the mainframe. However, he questioned whether all of the ponante are sufficie reloped to be ann

Three possible enhancements each of which would be considered major, according to Bardagy, include the following: an increase in the 3090's channel speed from 3M byte/ sec. to as much as 6M byte/sec.; a new version of the MVS/XA operating system; and an improvement in cycle time from 18.5 nsec to 16 nsec. However, Frederic G. Withington,

a vice-president with Arthur D Lit tle, Inc., said that not only are price cuts likely to be announced as IBM wers the challenge of the 3080 and the Japanese-made mainframes, but major performance boosts for the 3090 are also probable.

"I think the Japanese are m ant to IBM than the 3080 facto They keep playing leapfrog and trying to keep the pressure on each oth

Withington said. Withington expects that rather than increasing channel speeds or re-placing MVS/XA, IBM will introduce new 3090 configurations by adding two or four processors to the four-

logic (ECL) chips to the 3090's CPU to keep pace with the ECL techni ogy used by competitors. He said it is possible that new ECL-based technology could be offered on a field-up grade basis, minimizing the risk of alienating users who have acquired 3090s within the past year.

ets miner 3090 One analyst who expects only m nor 3090 announcements for next month is Dale Kutnick, senior viceesident of the Gartner Group. Inc., a Stamford, Conn-based market re-search firm. "I don't think you will see any price cuts at this point. If you do see any they will be minimal, may

be for something like the Model 150, Kutnick said. Kutnick said his company "continues to be somewhat cautious," telling customers to buy 3090s only as they em. He said the new release of MVS/XA is needed to make better use of the 3090's multiprocessing abilities and expanded storage, but that even if the channel speed is ineased, users will need a new con-

troller to support it.

Kutnick added that the er nts, such as a new MVS/XA and more active promotion of the 3090 Model 400 (which is scheduled for October shipments), are more likely to be added after Jan. 1, when IBM opes to get off to a strong financial start for the new year



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Micro-mainframe links dominate info center conference

Environment tool nounced at the show among rollouts

By Poggy Watt ANAHEIM, Calif. — The several hundred attendees at this year's Information Cen-ter Conference & Exposition tast week saw a handful of products unveiled, including several upgrades to existing products. Microcomputer-toainframe communications and other connectivity issues ere primary among the capabilities that were anAmong the products un-veiled were the following: Proteo, a software tool kit for the IBM Personal Computer and compatibles, is

used to create an environnt for micro to mainframe egration and is produced by a recently formed compa-ny called Proteo Software. Inc. of Markham, Ont. The company is a joint venture of Online People. Inc. of Toronto and Norenco Corp. of Min-

neapolis.
Proteo Software President Art Benjamin said some features were drawn from the integrated interface pioneer-ed at Xerox Corp.'s Palo Alto arch Center. He said the simpler interface reduces

training time. Proteo is not an operating vides the tools to create that environment and customize It for the individual user. It shields the user from operat-

ing system commands with natural language commands, uses icons where appropriate and enables the user to acress data without worrying about whether it is stored lo cally, on a network or on a mainframe Benjamin said

It also features "software obots," user-definable macro commands for backup pro-cedures, filing and sending of electronic mail, all of which can be conducted when the user is not at the keyboard. Proteo's name stands for Pro-fessional Tools for the Elec-

nic Office. Data can be input by menu, mouse, joystick and other alternatives, including ice. A Watson voice digitiz

er board from Natural Microsystems Corp. of Natick, Mass., is included with the

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purchase of a single-user ver aion, which Benjamin said is available for \$605. But the company is really eyeing the corporate site ticense sale, al-lowing unlimited copying throughout a corporation for a \$30,000 contract through Sept. I and \$40,000 after

 The Micro Rese ager from Atrium Informa-tion Group, Inc. of Fairfield, Iowa, offers a flexible data base system designed to help track, support and analyze the use of microcomputers

within a corporation. The package is designed for the IBM PC and compatible computers and includes standard purchasing and re-ceiving files as well as ana-

lytical report forms for plan ning and budgeting, according to President Ken track user requests, manage-ment's electronic answers

ment's electronic answers and progress on the requests, a function that Ross said will help document staff activity. The system can also retain entation files that can sted out as a custom-sanual for the user, information needed for the programs in use at a single workstation, "rather than drown the user in unfocused information," Ross said. "It's designed to be an effi-

ncy tool, a time saver," he The multi be available in the fall and will run on IBM Netbios-compatible PC networks as well as under Unix and Microsoft Corp's Xenix systems, Ross said. The Micro Resource Manager system sells for \$4,995 for an unlimited num ber of workstations. A startun version is available for

\$1,495 and supports as many • Concu ent Micro-Main frame System from Vasco of Lombard, III., an authoring system for mainframe com-

For more inform

transactions to take place on a microcomputer worksta-tion on-line with a main frame or minicomputer. Training takes place on

the actual application via a window training shell. The pop-up instructions or Help files are similar to the reference guides already marketed by Vasco.

As a training corporation Vasco will enter contracts to customize particular applications for computer-based instruction under Concurrent Micro-Mainframe System or license it for the user to cus-

Fees are \$20,000 per main frame system plus an annual maintenance fee of \$4,000. Annual rental is \$10,000, in-



Fourth Annual Conference

Integrated Office Information Systems: The Myths and the Realities

September 26, 1986 * Chicago - Ramada O'Hare Dr. Michael Hammer, Keynete Speaker

rence Topics & Featur OIS Implementation Stre OIS Vendor Positioning Dr. Carl H. tegration of Se to-user Compu-sice/Data Integ dustry Focus S dividual Works

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vice for dial-in access to your mainframe 3270 Bisync line LineMester is a communications watchdog which keeps a line in service until a user



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Auto maker supports MAP

By Takashian Kanadah
NAGOYA, Japan — One of Japan's
leading vendors of automobile elec-tronics gear, Nippondenso Co., said this week it will use General Motors Corp.'s Manufacturing Automation Protocol (MAP) as the basis for a fac-torywide local-area network (LAN).

"The move makes Nippondenso the The move makes Nippondenso the first Japanese auto industry player to support MAP.

inst Japanese and industry prayer to support MAP.

MAP is an implementation of the International Standards Organization's Open Systems Interconnector, which allows computers from different vendors to communicate over a broadband LAN.

cate over a bronzonama LAN, to be The Nippondenso LAN, to be stalled at a Nippondenso factory under construction, will be connect to the equipment that will prod to the equipment that will prod to LAN, to be innso factory still

Construction of the \$636.9 million factory began in May and will not end until 1995. Nippondenso hopes to use the LAN to establish an automation system that covers every aspect of manufacring from order taking to delivery. Fe are tilting toward MAP as a fac-ry automation protocol that may nso, a Toyota Motor te with 1985 revenue of

red to devel

roocs and machine tool controllers needed for the new factory. Some of that new equipment will be supplied by AB Denso Corp., a joint venture the firm established, a loint venture the firm established to 1964 with Allen-Bradley Co., a U.S.

ctory control system me Nippondenso's move is expected sh other Japanese industrial ma acturers closer to MAP support. ulacturers closer to MAP support. Several Japanese manufacturers — including Fanue Ltd., a robotics maker, and OMEON Tateist Electros-ics Co., a factory automation vendor — have already announced plans to - have already announced plans to test MAP for use in their networking

howev MAP because they are concerned that optical-fiber networks will prove su-perior to MAP'a coaxial cables for

Japan breaks chip record

TOKYO — Japanese semiconduc-tor production in June hit a record monthly high of 985 million units, up

11.2% from the same month a year According to Japan's Ministry of

International Trade and Industry, the previous monthly production re-cord had been 834 million chips, set in November 1984. The dollar value in November 1964. The dollar value of June's production was not dis-ciosed but is said to have decreased some 10% from the same period a

Europe wary of price war

PARIS — The current semiconduc-or trude battle between the U.S. and

tor vendors.

That battle may have ended last week as the U.S. and Japan concluded their semiconductor trade talks and set about implementing corrective action that could make Europe round. Like U.S. co

round. Like U.S. companies, European hip vendors have felt the pinch of aggressive Japanese pricing laggressive Japanese pricing Paripular de Paripu o in the U.S. will make Eu se the site of the nex

W. Germans end monopoly

BRUSSELS - The West German government agreed last week to end the monopoly that the national post and telecommunications authority. and telecommunications authority, the Bundespost, holds on the supply

of moderns.

The action comes in respons ruling by the Brussels-based Co sion of the European Comm

that the monopoly is illegal.

The ruling, announced recently by
the European Community, means
that private vendors will be able to
supply internal and external modems
directly to customers.

Lab to make chips in space

TOKYO — Three Japanese govern-ment agencies, including the Ministry of International Trade and Industry, reed recently to begin a \$193.5 mil agreed recently to organ a 183.5 mil-lion, six-year effort to develop and build an unmanned space laboratory. The lab, to be launced in 1992, will produce semiconductors and new ma-terials that can only be made in a

zero-gravity environment.

The lab, called the Prec Flyer, will be retrieved by the U.S. space shuttle after orbiting the earth for six

Bull to offer cabling system

PARIS - Groupe Bull, France's leading computer manufacturer, is expected to introduce its first cabling system at the Sicob office automation ade show that will take place in September.
The Bull Cabling System reportedly sets the specifications for wiring a new building or rewiring an existing

The system will be based on twist-ed-pair wiring and a star-shaped ar-chitecture similar to AT&T's Starlan system, sources said. Bull has al-ready chosen Ethernet 802.3 stan-dard as the basis of a 10M bit/sec. network to link hosts within a build-



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Ashton-Tate, Comshare join on micro-to-mainframe link

Target corporations

with proliferating PCs

By Poggy Watt TORRANCE, Calif. — Asbton-Tate took another step in its efforts to provide customers with third-party micro-to-mainframe options, announcing a link with Comshare, Inc. Under the agreement, users of Ashton-Tate products will be able to engage in a two-way direct micro-to-mainframe data exchange with Comshare's System W decision support software. A new release of Comshare's W/-

Information Gateway accommodates Ashton-Tate's Dhase III, Dhase III Plus and Framework II, allowing users to collect and edit data upload it to a mainframe data base for storage and reports. Those re-ports can then be shared through Comshare's Commander EIS for sending charts and reports from the mainframe to the workstation

Micros are part of the picture now, and managers are looking for ways to move that data," said Keith Kremer, Comshare marketing direc-

Kremer said Comshare and Ash ton-Tate share many of the same kinds of customers, particularly large corporate users with large data

PTO criticized

comation program have been inad-sate, that certain federal contract-

ing rules were ignored and that the program is a year behind schedule and more costly than expected. The estimated cost of the 18-year

prime contract with Planning Re-search Corp., a systems integrator based in McLean, Va., has increased by 55% to \$448 million, the GAO sald.

by 55% to \$448 million, the GAO said. According to the GAO audit, the PTO pursued automation with little regard to costs, used an inaccurate cost-benefits analysis and did not consider alternatives to automation.

bases and proliferating numbers of personal computer workstations. Fiplanning are two of the biggest s of Comshare wares, he claimed.

We hear it again and again from stomers, 'How do we tie all these things together?" " said Ron Arons s together? " said non Arons, eting programs manager for of-automation at Ashton-Tate. We're not about to sell mainfrar software, but we would like to go in with someone who already knows

that market," he noted. The W/Information Gateway rerase costs \$450 per user. It runs on an IBM Personal Computer or com-patible system and a 3270 Personal Computer with 512K bytes of ran-

dom-access memory. The release sup-ports coaxial communications using a variety of cor asynchronous through a Bayes Microcomputer oducts, Inc.-compatible modem.

The updated Comshare product is

available immediately through Comshare's direct sales force, but it will also be jointly marketed by the two The companies will share market-ing and promotions and train each other's sales staff to promote the new

Comshare products can already exchange data with products from Lotus Development Corp., which has also recently pursued the micro-to-

This is the latest in a string of coparty products offered by Ashton The company has similar agree

ments with nine other developers of mainframe software, including Applied Data Research, Inc. of Princeton, N.J.; Cincom Systems, Inc. of Cincinnati; Computer Corporation of America in Cambridge, Mass.; Cullinet Software, Inc. of Westwood Mass.: Informatics General Corp. of Canoga Park, Calif.; Management Science America, Inc. in Atlanta: Micro Tempus, Inc. of Montreal; Software AG of Reston, Va.; and TSI International in Wilton, Conn.



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The GAO report said the the De-partment of Commerce should stop funding the program until its direction and scope are reassessed

CIRRLIN Date Corpora

VIEWPOINT

EDITORIAL

Seizing power

If "power to the users" means millions of instructions per second and other performance benchmarks to you, then you may be more an "appliance operator" than a true cliizen of the information age. So says author Jay Bloombecker in this week's in Depth article on the growing legislative influence of

computer users groups.

The moniker is purponely pejorative. Bioombecker wants to anger computer professionals into raising their voices on legislation that directly affects the worksday world of MIS: software licenses, software warranties, operation of bulletin boards, taxation of software and regulation of VDT use.

software and regulation of VDT use.
When corporate or individual users have
banded together, most often in users groups,
they have met with remarkable success in
confronting the well-financed, well-organized vendors that attempt to lobby laws into
existence for their own benefit.

Witness the efforts of rechaled Drahamine through Strategic Cooperation, a group of 31 Fortune 100 managers who pushed ADAPS0 into creating first a microsoftware customer and vendor advisory board, then guidelines on microcomputer fordware warnaties. The battle to guarantee that software that the same promised is not yet over, and the same promised is not yet over, and the same profit of the property of the same profit of the profit of the same way to be a same profit of the same profit of the same way to be a same profit of the same profi

In another series of victories, computer users in serveral states including Arisona, California, Illinois and Hawaii beat back vendor attempts to pass legislation that was billed as protection against software piracy but in reality was an attempt to limit software manufacturers' responsibility for product perforfacturers' responsibility for product perfor-

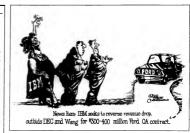
Similar successes have been won in the standards arena, despite the fact that standards-setung bodies are traditionally dominated by vendors that most benefit from spending money and time in world capitals hashing out protocols.

As reported in these pages last week, venfors are finally attending to a growing number of users who want the networking functions promitted by long-awaited, long-delayed to the page of the page of the page of the the International Standards Organization. Control Protocol Interconnect Protocol originally developed for the military, and vendors are tagging along behind, grudgingly providtion of the page of the page of the page of the Obs. 2 produced the page of the Obs. 2 produced the page of the

on a granuer scane, centeria secons Corp. postowed Manufacturing Automation Protocol on the computing world. Vendors that worked for years on Ethernet, let us say, might question the audiacity of a user determining a standard. But the point is that recognized the importance of standards and so took control of its own fate.

Of course, MAP is technically an OSI protocol. But at least GM got a chance to determine that part of OSI that most impacts its own needs and those of other manufactures.

In abort, there is power for the taking, particularly when users band together. Wise MS managers will use the tools of their trade computers, networks, bulletin boards and technical and professional groups— to help shape the agendas of vendors and legislators alike.



LETTERS TO THE EDITOR

Automation can't turn GIGO to PIPO
The In Depth feature, "Paper chase: Keeping up
with office productivity" [CW, July 21], by Ed
ward Yourdon, has inspired me to write. The head

with office productivity" (tw, July 21), by Edward Yourdon, has inspired me to write. The headline and teaser of this article both attracted my attention, since I am an office worker and want to be properly equipped so my company can compete successfully.

When I came to the fourth paragraph, my enthusiasm waned. I read the rest of the page with increasing astonishment. I had believed the author wanted to promote the concept of office automation to staff and managers. What the author accomplished was to insult the entire secretarial pro-

femion and then go us to track the good survice. "May oppositionis are also finding in increasingly afficient to him comprises during an analysis of the compression of the compression

As Yourdon proceeded with this profession assassination, the insight I obtained was that he missed the point. Scarcity of high-quality personnel is a problem that will not be solved by office automation.

On the contrary, new technology and procdures call for increasing levels of skill and awareness to maximize their effective use. While the modern executive can keyhound correspondence, the increase a special process of the contract of the increase a special process of the conmatted in the proper company style, an office professional with good administrative and interpersonal skills will remain a necessary member of any

I enjoy the new age of office sutomation when I no longer need to go through my executive: Even with a fine-tooth comb for spelling and spacing errors, never have to keyboard an address twice, keep the same pencil for a year, post bulletins with the sweep of an Enter key and maintain my Rolodex on file. Bowever I suspect it will be a while

yet before the personal computer will tell the vicepresident that the marketing director already sent a memo addressing that issue or that there are three more people who should have copies of a pro-

It takes judgment and skill to assure PIPO (perfect in/perfect out) rather than GIGO (garbage in/ garbage out)

My suggestion to Tourdon is that if he hired counted, intelligent sceretares as professional wages with continuing education benefits and open and the continuing education benefits and open and the continuing education benefits and open and the continuing the c

Shella M. Oranch Administrative Secretary Natick, Mass.

Missed deadlines cause late delivery

The column, "Technical edit cause of delay"

a. [CW July 14], stated that the technical review process can cause a delay in the implementation of the

This is very true. However, I would like to extend this to include all review processes: the functional requirements, design documents, program specs and especially the resolution of outstanding

The implementation date seems so distant during the design phase that the analysts and clients think they can delay meetings and miss deadlines think they can delay meetings and miss deadlines for approving published documents without feeting the implementation date. Then when testing is not going well and the date may be missed, everyone blames the programmers for not putting in enough overtime.

if the analysts and clients would work some overtime at the beginning of a project, more implementation dates would be met and programmers would not have to work around the clock in order to meet those dates.

Programmer/Analy

VIEWPOINT

In praise of a corporatewide information strategy

exter owns a business. It is big, for a business run almost sin-gle-handedly by its founder, and it is growing nicely. It has deents that offer different pects of the firm's service to different types of customers. Two of these departments can justify their own multiuser computing capability.

Dexter is not a computer type. He knows that the manager of each department can make intelligent deci-sions. So he let each one decide what sputer to get. They are not com-er types either, so they got con-

The consultants were competent.
But each consultant was hired by the
manager of one department to look at
the needs of that department. The itants did their assigned jobs well. One department got a Hewiett-Packard Co. HP 3000. The other got a work of IBM Personal Computer

XTs and ATs. By itself, each decision was rea sonable. The department with the HF 3000 uses a common data base. The 3000 uses a common data base. The other department consists of inde-pendent workers who need computa-tion capabilities and graphics. PC ATs give them enough power, and the network gives them sufficient inion exchange espabilities

Mallach is associate professor of computer science at the Boston Col-lege School of Management and a consultant to top managers of vendor and user organizations.

Unfortunately for Dexter, un-orld is not static. Sooner or later mebody will realize that his two stomer groups come from the same rporation. That somebody will re-ize that coordinating both sides of xter's firm could be a handy mar keting and decision-making Somebody will also realize that the nters already have the neces

ry data. So the poor soul will try to ine both halves That is when the hul ie will burst. The two informa on strategies are being with ought of eventual co tion. Each is pro

ng happily down By EFREM MALLACH ng programs on the HP 3000 will take advantage of every little quirk of that machine. The packages bought for the PCs will be ed for functionality, support and the like - but not for file struces that facilitate data inter-

efficiency today, Dexter is buying a lot of future headanhan

it is easy to look at the altua om the outside, when the long-term sue has been pointed out, and to see went wrong. Dexter should

mation strategy before spendi eral hundred thousand dollar Had the decision been made to stan rdize on the HP 3000, the PC users uld have found that it can do cor station and graphics.
Had Dexter opted for more PCs. there are file servers available to construct a shared data base. Neither

of these approaches is optimal for the other purpose. Both would require some extra work. The specific choice is not the point. The point that any choice should be made with a view to where Dexter wants to be in five years. Any oth er approach, any short-

will turn Dexter into a

Ware orry about this. As the saying sees. "When you're up to your earn in alligators, it's tough to rem that your mission was to drain the " Dexter is up to his ears in alligators. The last thing he wants to worry about is an information syses strategy. If he is trying to gro is business, that is also the iast One solution is to have a chief in-

ation officer. This concept, as a to that of a chief financial of r, was first proposed by William most and William Gruber in their

or the 1980s (Wiley, 1981) The chief information officer in ates information technology with siness needs and makes sure the whole organization pulls in the same firection. The information officer est have both technical competence

and a corporate strategic perse tive. The strategy must address b present needs and future goals

Suppose Dexter does not want (or really need) a chief information officer. All is not lost. First, he must recognize that information is a critical business resource in the 1980s, a fourth element of the traditional management-labor-capital base of which businesses are built Therefore, any departmental is

rmation systems proposals must be reviewed at the top for their corpo rate implications, just as capital bud gets are routinely reviewed today. Second, the consultants should be old to address the implications of their proposals for the other parts of uniness. Just as Dexter's managers would not accept business proposals that ignore what another de partment is trying to do, they should not accept information systems prosals that do not address what is be-

ing done elsewhere xter does not have to do it hur self. He does not even have to hire somebody full time to do it. But. as chief executive, he is responsible for ing that it gets done. If he does not do it now, he will suffer later

Work value analysis as yardstick for end-user productivity

A systems specialists are begains brought about through end er computing, some executives are beginning to question its value . . . especially where they have seen per sonal computers gathering dust or heard of machines being turned into

Now that the novelty has worn off, management is apt to weigh the benefits of this gear against many other useful expenditures. In this other useful expenditures. In this PCs. iocal-area networks and depart stal computers stack up? Lately not all that well

A major problem has been that it is often impossible to determine the benefits of end-user computing, not se these benefits do not exist, but because business analyses have been squishy concections of wishful thinking and naive economics.

If end-user computing is to resum its growth, information system spe

its growth, information system spe-cialists must finally be prepared to provide sound and objective cost-jus-In cases where white-collar effo

Schwartz is president of Computer Research Associates, Inc., a research and consulting firm in Atlanta.

enhanced by end-user computing, can be traced directly to the bottom line. the analysis can be very straightfor-ward. The problem is to develop a model of the cash flow. Unfortunately, these cases are in the distinct mithe vast majority of cases

where white-collar work enhanced by end-user computing yields indive come to fa vor what we call

READER'S PLATFORM work value anal ysis as a means

By A. PERRY SCHWARTZ oductivity increases. Work value analysis, which has

n developed in joint studies with EDS Corp., is based on the fact tha white-collar workers must divid their time among a variety of activities. Some are higher value activities: for example an engineer designing an antilock braking system for a new car or a financial analyst deciding

how to invest the funds of a thou

On the other hand, proofreading a port for spelling errors or locating ference materials must be looked on as lower value activities. And ne spent walting, traveling or look-g for a missing file may be regarded

tive of introducing end-user computing is twofold: one, efficie ow the white-collar worker to acish activities in a shorter peri od of time; and two, effectiveness to shift time from lost-time and lower value activities to higher value activ-

work value analysis emperically determines the value of each work

ding their day. This method has worked very well to account for gains in efficiency and effectiveness nd to document the projected ben fits of end-user computing, in dollars and cents, for hundreds of employees in major companies. By comparing and after measurements.

objective

these benefits can be objectively ver One criticism which surfaced out recently in "Cost justifying in-estments in office systems" [Comsterworld Focus, May 14], that has on leveled at work value analysis and other activity-based measures of white-collar productivity is that ese methods fail to take into account the fact that white-collar work is neither discrete, standardized por

Although this criticism seems rea

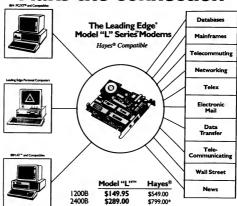
ie on the surface, evidence re ported by a number of management xperts refutes it.
One such expert is Henry Mintz berg. After a careful study of mana gerial jobs, he iabeled as a myth the otion that managers and profession als perform mostly nonrepetitive and structured duties. According to Mintzberg's findings, reported by him in The Nature of Monageria Work (Harper and Row, 1973) and in a Harvard Business Review article, other factors and Folklore and The manager's job:

fact" (July-August, 1975), the work of professionals actually follows a highly regular pattern.

Another noted management sp cialist, Harvey Poppei, the architect of Booz, Ailen & Hamilton, inc.'s study of the office of the future, also found that white-coilar workers de vote their time to activities in a very predictable manner

This study, covering more than 300 workers in 15 organizations and more than 90,000 time samples, was reported in "Who needs the office of niese, November-December, 1982 Thus, contrary to popular folk lore, white-coliar work does follow a repetitive structured and predictable pattern. Consequently, the benefits of end-user computing can be ob-

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IBMs). Yet at \$149.95 and \$289 respectively, the 1200B and 2400B Model "L" Series Modems are priced below equivalent Hayes Modems. In fact the Model "L" Series 1200B, including software and a 24-month warranty, is priced at one third the price of an equivalent Hayes

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COMMUNICATIONS

Charity gets Token-Ring

By Poggy Watt O. AKLAND, Callf. — One of the early IBM Token-Ring systems to be installed in the field, and among the very first running Novell, inc. 5 Advanced Net ware operating system, has been installed at a monprofit agency in Oakland. United Way of the Bay Area employees can use the network to access a data base of more than 20,000 small businesses, which will reside on a Novell file server,

said Associate Executive Director Jack Healy. Besides keeping lists of names and creary. ocsions resping into or names and numbers, the system will help fund-raisers dial potential donors, record their respons-es and other general information, prepare bolierplate follow-up letters and compile lists of names and donations.

"I think we have a significant new mar ket opportunity, and to get at this mari we need the state of the art of what to nology has to offer," Healy said.

The Token-Ring was the local-area net-work (LAN) of choice because of its high data rate, its ability to handle multiuser data base access without slowing down data base access without slowing down and its goarantee of longevity as one of IBM's priority products, said Mark I. Freund, marketing director and a co-founder of Interconnect Network Consult-ing Group of Pasadena, Calif., which pro-

ing Group of Pasadena, Calif., which pro-vided consulting services to United Way. The 4M bit/sec. Token-Ring is faster than token bus configurations, which typi-cally support 2.5M bit/sec. data rates, Freund said. And unlike Ethernet systems that use contention-based network access methods, the token-passing network does not suffer from response-time degradation

not suffer from response-time degradation during peak traffic periods, he added. IBM's endorsement of the token-passing ring ensured its continued availability and development, Freum noted. Also, United Way felt that with its existing installation way reit that with its existing installation of a System/38 and approximately 40 stand-alone Personal Computers, it was ai-ready committed to IBM products, he add-ed. "Picking the IBM-endorsed LAN en-

red future compatibility with other IBM offerings."
The System/38, with a few remote PC connections, helps track United Way's more than 100,000 area donors, said Doug

AT&T to sell ISDN chip

Unite follows 2B + D. data link control protocols

BERKELEY HEIGHTS, N.J. -- AT&T

Technology Systems recently assounced the commercial availability of Unite, a chip that can be incorporated into commu-nications boards that interface digital tele-phones, terminals and personal computers

The chip implements 2B + D, the ISDN standard that specifies two 64K bit/sec-channels for digitized voice and data transmissions and a separate 16K bit/sec. channel for control signals. The chip has transmission and a Separate to the channel for control signals. The chip has the built-in capability of formatting data according to High-Level Data Link Control protocols. AT&T Technology spokesman

Samples of the chip are now being re-leased to vendors of private branch ex-changes, terminals and other computer ent, Gates said. "We've been accused in the past of withholding our high-er level technology. This shows that we are not jealous of our work." The chip also is being designed into AT&T products, he added. Based on the typical six- to nine-month life cycle of board-level products, ISDN interfaces based on the Unite chip uld be almost a year sway, according to

vendors' ISDN boards may not be able to communicate, at least initially, Gates adnunicate, at least initially, used and d. "Some vendors are offering 2B + D interfaces that do not entirely conform to the ISDN standard. The Consultative Committee on International Telephony and Te-legraphy is trying to mesh the different versions, but that is a goal, not a fait ac-

INSIDE Codex introduces

a low-end network management sys-tem/22

NEW THIS

 Integrated Telecomputing Systems offers the Advanced Messaging System

INSTANT ANALYSIS At Cebit, a com-

puter industry conference held in West Germany this spring, attendees came up with a brand new

interpretation of the acronym for Integrated Ser-vices Digital Network (ISDN): IBM Schafft Das Nicht. or IBM doesn't make it



Bridge software spans PC, TCP/IP gap over Ethernet

By Elisabeth Horwitt MOUNTAIN VIEW, Calif. — Software recently introduced by Bridge Communica-tions, Inc. enables IBM Personal Computer users to communicate over an Ethernet

users to communicate over an Etherbet network with any other system running the Transmission Control Protocol/Inter-net Protocol (TCP/IP). TUPPerm is an IBM PC implementation of TCP/IP, a set of basic networking func-tions that are reportedly supported by ap-proximately 50 network and computer rs. PCs running TCPTerm can exchange files or communicate in host-to-ter-minal mode with computers running TCP/ IP, according to Bridge President William

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st a bundle, find out why Before you invest a bundle, find out w SYSTEM 2000 DBMS is the most eco nomical data base management system in

SAS and STSTEM 2000 are regulatered tradements of SAS into Carry NC, 15th. Camerado p. 1606 to SAS transacte for Proceed or the LISA



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Directories List 46,000 DP Users

Each directory of computer installations lines 10,000-16,000 computer users covering the NY Metro Area (NY, N) & CT), the Mid-Atlantic States (PA, VA, MD, DC, WY & DE), and the New England area (MA, ME, NH, R) & VT). Each site includes a confile of

used, future plans, applications and DP executives names, titles, and phone numbers. An index provides quick access to 133 cens references by hardware, software and industry. Pricer, NY 4560, MA 4398, and NYE 598 Call (212) 683 -9808. Computer Management Research, In-20 Waterside Plaza, NY, NY, 20 Waterside Plaza, NY, NY,

Charity gets Token-Ring

-From page 19

Rost, system manager, whose six-member staff will begin support of the new Token-Ring network as soon as the consultants move out and day-to-day operation begins. The company has tentative plans for hooking its System/38 to the TokenCOMMUNICATIONS

S Ring. Though a connection would require file conversion, Freund advised United Way that IBM will probably provide such capability.

Freund suggested that United Way who Novall

Preund suggested that
United Way use the Novell
1984 byte Novell T296B file
server and Novell netware
own Netbos network system on the Token-Ring, rather than IBM's
own Netbos network system
and dedicated PC AT file
server, which is less efficient
and slower, he said. 'Nowell's is a more powerful file
Novel's is a more powerful file

server than they need now, but when it comes time to add nodes, they should notice no degradation on the system."

United Way's decision to use Novel was reinforced by IBM's recost announcement that it would offer Netwers Version 2.0 as an option bundled with its networks. Novell's updated Version 2.0A of Netware supports the Token-Ring, Freund said. Another benefit of using Novell's file server is that it will easily evolve and expand with United Way's networking needs, preund seeds, preund seeds preund with United Way's networking needs, preund methods.

Novell's file server is that it will easily revolve and expand with United Way's with the pass of the

Novell also provides a remote asynchronous gateway that allows remote PCs to tap that allows remote PCs to tap the new data base by linking into the Token-Ring LAN over phone lines, Rost said. United Way's initial cofiguration consists of four 640K-byte Model 2 PC XTs with a total system cost of about \$45,000.

dication software

For its application software, United Way choos an integrated package, Execution System, designed for telemarketing by Perriess to the Company of the Company to the Company of the Company to the Company of the Company seems of the Company of the Company kee-Ring installations, it was amont certain to run on a force of the Company of the Company

neer in the still-new IBM Token-Ring world was not without challenges. Freund said he scrounged IBM network cards from several different dealers since they were not yet widely avail-

able. He was forced to install the LAN without benefit of documentation.

The new network fits into what a United Way spokesman calls "probably the most automated United Way of fices in the country." Throughout the five-country area served by United Way of the Bay Area, 100 employees currently have access to data residing on the network.

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THE DEDICATED "GOTER"

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(such as tape mount messages, etc.)...and can monitor other virtual machines (by allowing the operator to observe the activity

esignated userid and the operator console. Best of all...VMOPERATOR installs in less

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SCATIONS

Codex introduces low-end network management system

Monitors modems on nets of up to 248 lines

By Stanley Gibeon
MANSFIELD, Mass. — Target the low-end network management market, Codex Corp. recently intro-duced the 4840 Network Manage-ment System, designed for networks ment System, designed for networks of up to 248 lines. The new system, incorporating the Data General Corp. MV/2000 DC 32-bit minicomputer, is the smallest of the vendor's 4800

The 4840 is a dedicated system that monitors and does disappostic

es operators of

em can act The system can activate analog or digital diagnostic tests for up to four remote or central sites. In conjunc-tion with the 4840, Oeder 2500 series modewn can adjust their transmis-sion rates in response to fluctuating line conditions, Coder said.

A management reporting software package called Codex Management cations (CMA) is an optional 0 feature. CMA provides reports t help management identify net-

ork trends, evaluate system perfor-ance and assist in future planning, cording to Codex. McCormack & Dodge Corp. became

s beta-test site for the 4840 because "we were looking for a mid-price sys-tem that would offer network con-trol," said Mike Lake, technical maner for data communications at

Cormack & Dodge. Lake said he was attracted to the larger 4800 series products, but they were too large for McCormack &

Dodge's network. The software syst ems firm u the 4840 in a network that offers reproduct demonstrations to nine mote product demonstrat tion centers around the co-

stics help ensure that the software emonstrations do not develop prob

lems due to network glitches. Lake The CMA package allows network operators to identify and remedy potential trouble spots before they become serious, he added.

au-driven proj

In addition, Lake praised the CMA package's menu-driven program, which allows employees who are not highly trained network managers to use the system. He said this feature is norticularly meeded in McCormook. rticularly needed in McCormack & Dodge's network, in which a comput-er operator, rather than a network manager, is normally in charge of the

The other 4800 products, the 4850 and 4860, were designed for networks of up to 496 lines and up to 744 lines, respectively. All 4800 Net-work Management Systems are soft-

ware compatible. The 4840 system is priced at Applications software package is priced at \$2,000. Both are available within 60 days of receipt of order, according to Codex.

Software spans PC, TCP/ÎP gan

From page 19

nent capabilities include the generation of user sudit trails for accounting and security purposes TCPTerm interfaces directly with

ICPTerm interfaces directly with BM PC-DOS. Carrico said Bridge is currently considering a new release of TCPTerm that would link TCP/IP to Netbios, IBM's widely supported interface for network applica link between TCP/IP and Netbios would permit direct com between an application on the IBM PC and an application on another networked system, he noted.

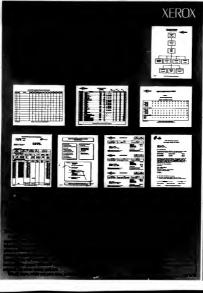
networked system, he noted.
TCP/IP networking products from
Bridge and several other vendors enable a wide range of user systems to
run applications on Cray Research,
lnc hosts residing at Minnesota Supercomputer Center, Inc. Many of the Minneapolis time-sharing company's customers are research and academic institutions that use Arpanet, the De-partment of Defense network for which TCP/IP was originally de-

"We like TCP/IP because it is an open protocol, because it is a govern-ment-supported protocol and because it is used on a wide number of sys-tems," said Robert Williams, Minnesots Supercomputer executive vice-

The company currently has IBM PCs doing file transfer and terminal emulation across the TCP/IP net-work, but it would like the higher level communications espablistics

provide.
"The IBM PC user should be able
to do his number crunching on the
Cray, then use the results in a local
PC program," Williams said.
Available now, TCPTerm is priced

at \$300 for the single-use



SOFTWARE & SERVICES



Firm quietly making move

Inc. in Princeton, N.J., is an outperfer that Feynman and princeton, N.J., is an outperfer that few people in DP have had much cause to consider. We know Marrin Marteta Corp. as a builder of missiles, defense-oriented electronic systems and the external fuel tank on the space shuttle. But what does the commany have took with

does the company have to do with mainstream DP? As you may recall, the parent compa ny has acquired two noted software companies: Mathematica Products Group, Inc., the originator of the Ramis Il information center management tem, in 1983, and Oxford Software Corp., producer of the UPO application development system, in 1985. Since then, Martin Marietta Data Systems has

been attempting to fold these two firms nd their products into its product line.
Reing acquired by a \$4.4 billion corporation is no guarantee of success for a small software company's product line. On the contrary, software develop-ment is such an individual thing that the imposition of a strong corporate ment may have a detrimental effect. So where is Martin Marietta go-ing with these two acquisitions?

In mid-May, Martin Marietta reased an update of Ramis II that offerred multiple users the ability to si-multaneously read and update files and data bases. The difference between this currency and the one-user-at-a-tim product was great enough that "every line of code in Ramis has been replaced," except for the basic infrastruc-

Robonck is Computerworld's session editor, software & services.

Software consultant finds development tools lacking

y Charles Babcock

John B. Landry III, s man regarded as a
ading practitioner of software developent, says the software industry is going

otogy.

The ability to embed expert systems in ommercial applications opens the door to new software development possibilities.

ndry says Landry, developer of McCormack & Dodge Corp.'s trendsetting Millennium sepodge Corp.'s trendsetting Millennium se-ries and now chairman of Distribution Management Systems, Inc., a Lexington, Mass., applications firm, was hired as a consultant to ADAPSO to report on direc-tions in software development. The report tions in software development. The report is the first in a series to the 800 software and service firms in ADAPSO and is in-

tended to help them in their own develop Landry says expert systems need to fit SOFTWARE NOTES

Goldman named

CEO of AI firm

Robert Goldman, former president of Celliaet Software, Iac., joined the Artificial Intelligence Corp. (AIC) of Waltham, Mass., last week as president and chief executive officer. The firm is the producer of Intellect, the natural

the producer of Intellect, the natural language query system marketed by IBM and Cullinet, among others. "All the work being done in expert systems is being done with LISP and -Prolog, Nobody has attacked expert sys-

tems from the IBM mainframe side," Goldman maintained. Unlike many oth-er Al firms, AlC has built interfaces to

the main IBM environments, he said.

his position at See NOTES page 27

into the IBN mainframe environment to be adopted in commercial systems. IBM's QL, which is emerging as a de facto standard, provides a common data manipula-tion command set for future applications.

While LISP and Prologue, the typical ex pert system languages, do not run on IBM mainframes, rules-based programming systems that do fit into commercial mainframe environments are on the horizon, he

IRM announced VM/ES for develo expert systems under VM/CMS. Digital ipment Corp. is expected to announce a shell system later this year, Landry says. and his own company will offer a shell product this fall that will allow expert sysens using SQL commands to be embedded

roaches not only result in in-See CONSULTANT page 26

Manufacturing modules debut

Stanley Gibson NATICK, Mass. — McCormack & Dodge

Corp. released the first three in a series of eight upgraded manufacturing modules for its Production and Inventory Optimiza-tion System (PIOS).

The software was designed to run on

The software was designed to run on Digital Equipment Corp. minicomputers using DEUs Application Control Manage-ment System/Terminal Data Management System (ACMS/TDMS) transaction pro-cessing system. The previous version had worked with DEC's Forms Manageme System (FMS).

Most of the ACMS chang "Most of the ACMS changes are trans-parent to the user," said James Koren, who is in charge of implementing the system at Infotron Systems Corp. in Cherry Hill, N.J. He said the version would allow him to cut data entry time in half

INSIDE IBM announces a

System/36 manufacturing application with host support/26

NEW THIS

- Sun Microsystems offers Autocad on Sun 3 workstations Venturcom's
 - Prokude informetion man. agement system now supports Unix
- For more on these and other new products, see pp. 67-75.

INSTANT ANALYSIS "This period in DP

history will be remembered as the rebirth of software development technology. The last major renewal occurred with the accentance of online transaction processing and nonrelational DBMS systems.

in the ADAP! port, "Softwa

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tions, such as you quenes, update REASON #5 HIGH-SPIED
RELATIONAL SORT FACILITY
OPTIMIZES DATA AGGREGATION Ad hoc relational queries fre-uently request that data be of VSV mermal son facility eforme aggregation and elimi in early, leaser than proviously

REASON #6 EPPICIENT R LEVEL LOCKING OPTIMIZES TRANSACTION THEUPLY Rowlevel locking and a read-resistancy model optimizes ORACLE 5 menaction concurrency For the

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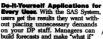
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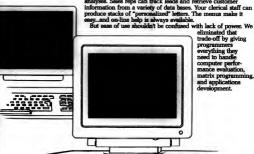
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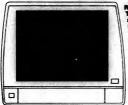


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System/36 shop floor aid out

Tracks manufacturing employee, job status

WHITE PLAINS, N.Y. — IBM an-nounced a System/36 manufacturing application, Production Monitoring and Control program (PM&C), for

and Control program (PM&C), for tracking employee status and the sta-tus of jobs on the shop floor. Using data collection terminals on the shop floor, employees clock on and off jobs, move materials and re-port activity to PM&C.

port activity to PMAC.

The system then analyzes the status of jobs, work centers and employees for up-to-date reports, acc to IBM.

controlled, since problems can be identified and resolved as they oc-cur," IBM spokesmen said.

en in RPG-E Written in the System/36 programming language, RPG-II, it is available immediately for \$3,600.

available immediately for \$5,600.

IBM also amnounced bost support for the exchange of information between PM&C and as many as five MAPICS II applications.

MAPICS, for Manufacturing, Acting and Production Information d Control System, is IBM's manung system. Host support is de immediately for \$360, IBM

Consultant finds tools lacking

From page 23

telligent, workhorse applications i also combat a number of traditio

ment prob

development problems.
The typical development process, he charges, has too many people, too many different modes of expression — from English specifications to flow charts to program code — and too little user feedback.
With four people working on a project, there are 12 communication paths and that many potential avenues of misuanderstanding. With 32 people, there are 992 communication

pie, there are 992 com ropie, unere are MMZ communication iths and that much greater poten-

at these delications, he is automating the system occess as much as possible, communication paths, im-nmunication vehicles and ds auton egrating the d a syst ftware developers should seek a velopment environment that leads applications that are both portable

Working with advances in third neration languages, such as struc-red Cobol or reusable code, does oblems in the system analysis and

problems in the system analysis and design stages, he notes. Fourth-generation technology in-cludes fourth-generation languages, applications development systems and application generators. Each of-fers advantages over third-genera-tion languages, but none meets all six goals named above.

goals named above.

IBM's fourth-generation language,
Cross System Product, provides a
tool kit to develop applications
across the major IBM operating systems, thereby offering portability. It
also has a component that will automatically optimize system perfornce after the application is creat

ed.
Also available are such development systems as Millennium SDT, UFO from Oxford Software Corp., (now part of Martin Marietta Corp.) and Gener/ol from Pansophic Sys-

tems Inc. Millennium SDT is the set of tools Landry used to develop the Millenni-um series. Management Science America, Inc. and Software International Corp. have brought out similar tool sets for their integrated, applica-

IBM's Cross System Product and other tool sets still leave the design other tool sets still leave the design phase underautomated, he notes, but they allow developers to quickly build prototypes that can be fleshed out into applications. The design be-comes the application, "reducing tion paths and providing nsistent tools for representation be said

Another fourth-generation technology, applications generators, are expensive - \$100,000 to \$200,000 expensive — \$100,000 to \$200,000 to \$200,000 - but can convert design specifications into prototypes and generate the production application. (This week a Product Spotlight focuses on applications generators, beginning on page 389-) Examples include Panophic's Telon, Sage Systems, Inc.'s APS, CGI Systems Co.'s Pachase, Higher Order Software, Inc.'s Use-It and Tarkenton Software's Gamma.

These systems automate the de-

and rarkenton Software's Gamma.

These systems automate the design and coding process, Landry writes, but the ability to develop protypes "is constrained by the amount of detail required in the design specification."

sign specification."
In the hands of skilled developers, In the hands of skilled developers, fourth-generation languages combined with data base management systems allow applications to be created more quickly, often through prototyping that allows prompt user feedback. Furthermore, the proto-type can be fleshed out to become the system, "reducing communication paths and providing communication for representation."

or representation."

But experienced users of fourthmeration languages are rare. In the
ands of a poor developer, they creee "a lousy system but much more
aickly," he writes.



Firm quietly making move

From page 22

ture, says Donald R. Shaw, vice-pres ident and general manager of Data

Systems.

Over the last few years, Ramis II has been dropping back in second place to its primary competitor, Information Buildern, Inc.'s Focus. Obviously, Martin Marietta was not satisfied with that position.

is life with that position. The rewrite process opened up the opportunity to coordinate the openation of Ramba with other parts to the openation of Ramba with other parts of the parts of

are integrated with MAS in their current, controlled release. One can sense a powerful realignment taking place here. Manufacturing software is one of the growth

ing software is one of the growth areas of the industry; manufacturers, such as the automakers in Detroit, have been automating with a vengeance since the back-to-back recessions of 1980 and 1982, and their appetite for software has only been whetted by their early success.

whetted by their early success. So what happened to Dxford Software's UFO? It has been folded into new Data Systems product. Consensus, that packages a version of Cobol, a nonprocedural fourth-generation language, and UFO together into a shared application development environment. The Cobol language offered is the one familiar to standard Cobol programmers, but its use of interactive screen painting facilities

Notes: AMS buys Anacomp line

From page 23

Cullinet March 12 upon the appointment of David Chapman as Cullinet's new vice-chairman and CEO.

American Management Systems, Inc. (AMS) has acquired the Banksery product line of Anacomp, Inc. of Indianapolis. The line includes six credit management systems for banks, including the Installment Loan System, one of the most widely used loan packages.

Information Ballders, Inc. is offering an \$8,500 interface from Focus to Datacow/DB, the relational data base management, Inc. It will permit a Focus user running under MVS/TSO to use Focus reporting and data analysis functions against data in Datacom/DB, Information Builders officials said.

officials said.

Burroughs Corp.'s Line, also known as the Logic and information Network Compiler, now rans on its XE 580 Unix-based superminicomputer. The system is able to generate applications that run on Burroughs's 1000 through 87000 series, V and A series and the supermini, Burroughs said.

enables a Cobol programmer to develop CICS applications without further training.

ther training.

There isn't space to discuss the initiatives Data Systems is issunching in microcomputer software as well.

Suffice it to say it has some of the same underlying goals: "We are trying to find a scheme that enables us to capitalize on the recognition of old.

ing to find a scheme that enables us to capitalize on the recognition of old products and at the same time create a new family structure," Shaw says. The revamped manufacturing applications are sitting atop a unifying architecture, "a kind of mets operating system," that not only ties to-

plications are sitting stop a unifying architecture. "a kind of meta operating system. That not only the stories operating system. That not only the stories operating system that not only the stories operating the stories of the st

Manufacturing modules debut

From name 23

Koren also said he anticipates benefits from the ACRS/TIMS version's hability to support a large number of the support and the

Cormack & Dodge marketing manager. Knapp said the ACMS/TDMS version is also 35% to 40% faster than FMS and contains improved security features, among other enhancements. The 11 current users of the FMS version of PlOS are upgrad-

we remove the country person of the person o

PIOS was developed by Rath & Strong Systems Products, Inc. of Dallas, which was acquired by McCormack & Dodge in 1985.



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	bdissapolis		VA Richmond	Dec 11
XT.	Louisville	Sep 30	WA Seattle	Oct 9
LA	New Orleans	Dec 16		
	Streeport.	- Dec 10	CANADIAN SEMIN	
MA	Boston	Sep 24	Colony	.Sep 17
	Durington	.0a2	Montreal	Sep 25
	Newton	Dec 4	Ottawa	.Oct 39 .
M	Detroit	. Sep 11	Quebec	
MO.	Minnespolis	. Oct.23	Storonto	Nov 13
100	Karanas City	. Sep 18	Wantipeg	. Oct 14

INGRES. The Distributed SQL Relational DBMS.

One size never fits everybody

Some people paint pictures. Others jog to work. I build shelves. On cleanup days, most of my neighbors put out toes of trash. I throw away maybe one bag.

All of which is to say that I am an ator, a saver, a collecte I don't know when it started. Proban I was born. Maybe before. And as the years passed, this pa for collecting grew - to stamps, firstrecords (I have the first RCA 33-rpm long-play record ever made), necker-chief slides, puppets, robots and finally

to computers.

Recently, a friend of mine m that he had upgraded to an IBM Perso al Computer and was selling his Tandy Corp. TRS-80 Model III — actually, two of them — and was I interested? Since I still use a Model III for word processing, I was sorely tempted. I already had ee Model IIIs (one I use, one my kids use and the other is a snare) but he knew that I bad long ago concluded that you can't have too many computst as you can't have too many

screwdrivers or too many RCA-to-RCA This time I resisted - at least ten orarily. My house and U-Lok stora cker are already overflowing, and I felt I had to put an end to this mindless

I recently filled out a goo from a computer magazine asking what computers I owned. They allowed space for only foor computers, not nearly enough for my 22 machines. Do I use them all? Weli, not really. (In fact, since many of these companies no longer pro-duce PCs, I didn't bother to decipher the alphabet soup that makes up their See ONE page 33

Ahl founded Creative Computing Magazine and is the author of more than 20 books on recreational, educational and professional computer ap-

Microsoft, Intel offer users Xenix 286-Unix migration

By Eddy Goldberg
Intel Corn, and Microsoft Corn, recently announced an agreement that will ensure that users of Microsoft's Xenix 286 will

have a place in the growing environment of multiuser, multitasking systems based on the Intel 80386 chip and AT&T's Unix

Under terms of the agreement, Intel will include in its System V/386 Unix V.3 de-rivative the capabilities and features needed to run programs written for Micro-

This will provide users of Xenix 286based applications with a migration path that will allow the Xenix 286 software base to be merged into the Unix market, ng to Leslie Vadasz, senior vicepresident and general manager of Intel's Systems Group in Hillsboro, Ore.

The agreement specifically provides for Xenix binary compatibility under Unix V.3-based Intel board and system prod-ucts. Intel[®] 80/286 and 80/386 are the prinducts will include Intel's Opennet localproducts will include Intel's Opennet local-area network family, its Host Communica-tion Products, Apex moltiple processor systems and applications software run-ning on Intel boards and systems. The System V/386 products are sched-

uled for availability in mid-1987, accord ing to an Intel spokesman. System V/386 tures currently include support for the 32-bit programming model of the 386 chip

and demand-paged virtual memory as well as support for the Virtual 86 mode of the processor. This allows Microsoft MS-DOS software running on Intel 8086- and 8088 based systems to run on 386-based products using System/V 386

in another Unix-DOS development, Linkdata, Inc. of Union, N.J., introduced a Unix System V Release 2 version of its MPC/68 coprocessor board that allows IBM Personal Computer ATs and compati-

bles to support up to 17 users in a mul-tiuser, multitasking system. The company also expanded the MPC/ 68 from 512K byten to 1M-byte, 2M-byte and 4M-byte memory options. The MPC/ 68's speed has also been boosted from 8

MHz to 10- or 12.5-MHz options The memory expansion allows the co pany's enhanced Motorola, Inc. 68000 co-processors to support Unix V.2 concur-rently with MS-DOS operations. Users can

switch between the two enviro rith a single keystroke, allowing MS-DOS See XEMX page 34

INSIDE

Mouse Systems Corp. is set to announce a PC Mouse version that provides a dedicated mouse port/34

NEW THIS WEEK

 Tandy offers the 102 portable computer Comark Corp.

announces the Expert-AT workstation

other new products, see pp. 67-75.

INSTANT ANALYSIS

By and large IBM would not want to come out with a 386 machine until probablv 1988, because it tends to milk product life

cycles."

TI develops expert package for PC

System developer aimed at entry-level market

y James Connelly AUSTIN, Texas — Aiming its expert systems development program at a lower entry-level point, Texas Instruments, Inc. last week introduced a development sys-tem designed for use on IBM Personal Computer-class syst

on to announcing the Pen Consultant Easy expert system shell, Ti re-leased Version 2.0 of its Personal Consultant Plus, which is the company's year-old system for IBM Personal Computer AT-

Personal Consultant Easy includes the basic functions of Personal Consultant Plus 2.0 and allows the novice over to de-

velop small to medium-size expert sys-tems, according to Mark Linesch, TI's

product marketing manager for the Per-sonal Consultant series. "Personal Consul-tant Easy allows quick prototyping for the newcomer and power for the experienced Linesch said.

Linesch emphasized that systems developed with Personal Consultant Easy are compatible with Personal Consultant Plus 2.0 and TI's high-end Explorer Lisp-based symbolic processing system. Personal Consultant Easy supports knowledge bases of up to 640K bytes of random-access men (RAM), rule-based applications and aphles using TI's version of the IBM Enhanced Graphics Adapter (EGA). It Includes data import facilities for Microsoft Corp. MS-DOS files and Ashton-Tate DBase

II. III and III-Plus inquiries onal Consultant Plus 2.0 supports up to 2M bytes of RAM and features new development capabilities like frame de-scription, which allows the user to break

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Microsoft Mouse costs only \$549. Now, take a look around and try to find a better value.

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most is a regimened reademark and InPort is a trademark of Microsoft Corporatio

One size never fits everybody

From page 29

names.) I'm keeping my original S-100 bus Altair, IMSAI, SOL, CSS, and progree for historical and sentim I reasons. Likewise for my first PET and Texas Instruments 99/4 (with the Chiclet keyboards) and CC40, Sinclair ZX81, and Spectravi-

It was only a short while ago that I retired my 1978 Apple Computer, Inc. Apple II in favor of an Apple IIe. My Atari Corp. 800 is still a terrific game machine; there are some mar-velous music programs for the Com-modore 64; and the Mac has no equal for page layout.

Several computers are more effective than one general-purpose machine. Sure, I could do all of my personal computing tasks on one computer, but

Which brings me to the point of all this: Several computers are more ef-fective than one general-purpose ma-chine. Sure, I could do all of my personal computing tasks on one computer, say an IBM PC XT or

e. But it would be an ineffective debeet and data hase an plications, it would be fine. But for sing, it would be less on for I would not have so

77

it would be an ineffective compromise.

to hundreds of old disks containing ious articles, memos and notes For telecommunications, I some-times want to use the same computer I use for word processing, but other

times, when I am on the road, I want to use a portable like a NEC 8201 or a Tandy Model 200. For desktop publishing, m packages have been released for the IBM PC, but the Apple Macintosh is still the leader. The page layout

packages for it are unequaled, as are the libraries of "clip art."

And since children are among the users of my personal computers, I felt it would be a mistake to not have an Apple II; there are more educaional packages for it than for everything else combined

My computers also serves as a diversion from work, so the scores of entertainment, music and graphics and drawing packages available for the Commodore 64 and Atari 8-bit computers made it essential to have at least one of each machine. Within six months, that will be true of the Ateri ST and Commodore Amiga as

So the next time your boss says,
"You want to buy another what?,"
just wave this column and say,
"Well, if Ahl has 22 computers, why can't I have just one more?"



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PC Mouse version alleviates need for multifunction card

Provides dedicated port for peripherals

SANTA CLARA, Calif. — louse Systems Corp. is cheduled to introduce today version of its optical PC ouse that also provides a selfected means not.

ry, mouse and perspaceal de-vices to a microcomputer without having to purchase a multifunction card, the firm said. The product also elimi-nates the need for an exter-

ates the need for an exter-al power supply.

Guaranteed for life, PC louse Bus Plus includes a PC louse and the Bus Plus card, louse System's PC Paint

Plus business graphics pack-age and Designer Pop-Up Menu software. enu software. Wish the menu software, the mouse can immediately be used with 13 major application packages, including Lotus Development Corp.'s 1-2-3 and Symphony, Micropro International Corp.'s Word-

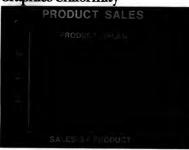
vice is said to be fully com-patible with all software packages designed for a mouse, including Microsoft Corp's Windows and Micro-soft Word and Digital Re-search, Inc's Graphics Envi-

roument Manager environment, the firm said. The PC Mouse Bus Plus instar and Ashton-Tate's Dhase corporates a new device driv-III and Framework. The de-er that the company said

gives more flexibility in add-ing peripheral devices to an IBM Personal Computer. Ac-IBM Personal Computer. Ac-cording to the company, the driver frees the standard COMI and COM2 port ad-dresses, permitting two seri-al ports and the Bus Plus's dedicated mouse port to function simultaneously. PC Mouse Bus Plus is cur-

rently available

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North, Arboretum Plaza One, Austin, Trans 78759.

EXECUCIÓN

Xenix-Unix migration

to run local software while Unix executes applications in the background.

Linkdata is also offering a new front-end processor to provide faster I/O for the Unix systems. An eight-port front-end processor with a

68000 chip is priced at \$1,895 and a 16-port version at \$3,495. Under Unix System V, the MPC/68 can run applications written in Digital Equipment Corp.'s VAX Dibol, Digital In-Corn 'e

formation Systems Corp.'s DBL, Ryan-McFarland Corp.'s RM Cobol and the C programming language.
Prices for a 1M-byte, 10MHz MPC/68 board including
a Unix System V license for eight users is \$4,495 and is currently available. An up grade to 2M bytes at 10 MHz costs \$2,695 and is available

TI develops expert tool

and related problems, and meta rules, which tell the user how to best use a piece of information in conjunction

of information in conjunction with other knowledge. A runtime option is avail-able for both products. The products will be avail-able in September. Personal Consultant Plus 2.0. Consultant Plus 2.0. Costs \$2,950. Runtime di-kettes cost \$95 or \$996 for 20

11th Annual Confe Sept. 7-10

SYSTEMS & PERIPHERALS



IBM 4300s next in line

ow, eyes can shift to the 4300s. IBM has made its pitch for the new System/36s and 38s and has tried to clarify its strategy for users of those segments of the mid-range lineup. But what becomes of the comment's But what becomes of the company's 84361s and 4381s? The answers appar-ently will be coming within six months, with some signs due as early as Septem-

The latest reports indicate IBM will introduce its Micro370 microprocessor based, mainframe architecture smallscale system as soon as next mo That machine is likely to extend down-

ward from the 4361 product line and effectively replace the 4361 as the en-try point to IBM's mainframe world. In addition, the long-rumored CMOSbased replacement for the four 6month-old models of the 4381 family is drawing closer. Experienced IBM watchers have been predicting that the 4381 replacements will be introduced in February, just one year after the four newest models were announced as mid-life kickers — or late-in-life kickers —

e challenge IBM must address. wever, as it turns its attention toward the 4300s and the Micro370, is that it cannot afford to bring back the confusion that has surrounded its mid range line and left customers wonder-

ems to which ing if the individual sys nacives fit into See BM page 38

Connolly is Computerworld's senior editor, systems & peripherals.

DEC cuts IBM CPU share

Study of medium-scale mart also shows supermini growth

By James Connelly PRAMINGHAM, Mass. — Digital Equipment Corp. continues to make inroads in its fight with IBM for the medium-scale processor market, although IBM's emphssis on selling mainframe-type systems in that market gives it an edge in value of

shipments.

That was one conclusion of a recent study of the medium-scale industry by the Framingham-based market research firm International Data Corp. (IDC). The report also predicted that the market for the high-end minicomputer and low-end main frame systems will grow for the rest of the Os, although at a slower annual pace of 9% than the 15% that it grew during the

years 1980 to 1985. in addition, users surveyed by IDC reported that they expect continued growth

in their need for superminicomputer processor capacity. in separate surveys, with more than 700 IBM customers responding to one survey and 470 non-IBM users answering another questionnaire. IDC four

that most users plan steady growth in CPU nand for the years 1986 to 1988. For example, only 16% of the non-IBM sers and 18% of the IBM customers reported no planned growth in CPU requires, whereas more than 33% of each oup said they expect annual growth in cess of 25%. More than 30% of each group also reported higher than 25% annu-al growth rates for disk capacity and per-

IDC analyst Richard Mikita said one her key finding of the survey was that the majority of the users said the major bottleneck in a superminicomputer system is disk-access speed rather than CPU

"It is clear that in this medium-scale

Gould, Inc. inrange, it is the overall system capability, See DEC page 36 troduces

Lvnk intelligent workstations bow By Eddy Goldberg KING OF PRUSSIA, Ps. — The Lynk

Corp. recently announced a oumber of in-telligent workstations and printers for the IBM System/36 and System/38 departmental computers, as well as onhar and price cuts for its IBM 5291-co

tinglynk/I and II as the first intellige workstations offered for the IBM System 36 and 38. The products are built arou Lynk's first product, the IBM 3180-2-co patible Lynkstation/802, which beg hipping last December. The 15-in. Comp tinglynk workstations are designed to bine IBM Personal Computer functi allty with a workstation, allowing users to 3180 programs and use stand-alone sonal computing software such as word cessing and spreadsheet programs, said

Jacob R. Powell, marketing vice-president The Computinglynk/I is a "diskless PC upporting IBM's virtual diskette. It will account Microsoft Corp.'s MS-DOS 3.2 and

be available in September for \$2,195. A \$395 optional 316-in. disk drive will be e in October

available in October. The Computinglynk/III, in addition to containing the features of the Computinglynk/I, will allow users to add one or two 544in. disk drives and up to four IBM PC-compatible expansion cards. The price for a single-drive model, available in September, in \$2.800. Pield upgrade kits for existing Lynk workstations also will be available.

bie in September Lynk also anno ced that the price for Lynk asso announced that the price for its Lynkstation/912, a 15-in. workstation for the IBM System/96 and 38, has been lowered from \$1,525 to \$1,395.

INSIDE

NCR introduces an enhanced tape cartridge control-ler/36

NCR offers two sets of integrated circuit design tools for Mentor Graphics workstations/38

NEW THIS WEEK

■ Lattice Logic offers Application Specific Engine Workstation

IP9000 series image proces-

For more on these and other new products, see pp. 67-75.

INSTANT ANALYSIS

When we have the tax bill behind us, maybe then people will start buying comput-

ers.

Apollo unveils TOS package

Office system includes publishing software

Recommeny Hamilton CHELMSPORD, Mass. — In keep-CHELMSPORD, Mass. — In free-ing with its plans to market a series of prepackaged systems, Apollo Com-puter, Inc. recently introduced a package designed for technical office applications that will include WPS.C, shing software from Interleaf, Inc.
The Technical Office Support

The Technical Office Support (TOS) system will be offered in a similar fashion to the computer-sided-software engineering package introduced in early July. The two TOS configurations are based on the vendor's low-end workstation — the Series 3000 — and come with Apollo's Domasn/X operating system and

ile Interleaf's WPS.C will be a

standard part of the package, cus-tomers are also provided with dis-counts ranging from 30% to 40% on counts ranging from 30% to 40% on four third-party application pack-ages. Additionally, imagen Corp. will offer its 8 page/min isser printer, imagestation, at a 20% discount. The TOS-3000 Starter 5 Pack, which sells for \$78,800, includes five Series 3000s, each with 48 bytes of

Series 3000s, each with 4M bytes of main memory, three 72M byte disks, a 60M byte cartridge tape and two floppy drives. The package also has five node licenses for Apollo's DPSS/Mail and Interfacef wPSC is Oftware. The TOS-3000 5 Server Pack, which selfs for \$105,400 and is also based on five Series 3000s with 4M has of main servery resch.

based on five Series 3000s with 4M bytes of main memory each, has less disk and tape storage than the Start-er Pack but includes a Domain File Server with 442M-byte disk capacity. It has two 72M-byte disks, one 60Me cartridge tape and one floppy

Compugraphic CG6000 merges text, graphics via pasteup enhancement

See LYNK page 38

By Eddy Goldberg WILMINGTON, Mass. — Comp

graphic Corp. recently added eleconic passup capabilities to its indular Composition System (MCS) roduct line with the CG 6000, an publishing workstation hardware from Sun Micro

The CG 6000 allows users to m and manipulate text and graphics to produce fully made-up pages with text. line art and halftones in posi-

Up to four Compugraphic MCS Powerview text input systems can be hooked to the CG 6000 workstation. The text is then merged with digi-tized graphics from a Compugraphic Scanner 2000, according to the ven-

Output is on either the Compugra phic 8600 Imagesetter phototypeset

ter or the Compagraphic 9600 taser

output device

The CG 6000, built on the Sun-3 Motorola, inc. MC68020-based workstation, features 1,024- by 1,024-pixel screen resolution, pull-down menus, message prompts and a Helr

Delivery of the Compugraphic CG 6000 is scheduled for first-quarter

The price for the CG 6000, Compugraphic Scanner 2000, software, 120M-byte hard disk drive and 45Mbyte tape drive for archiving and ing up both text and graphics is

\$70,000 According to the vendor, two op-onal 120M-byte hard disks can be dded for a maximum storage capality of 360M bytes

NCR offers tape cartridge controller for backup

Features 64K-byte buffer, bus sharing - NCR Corp. recently announced a 4-in. tape cartridge control-

mall computer systems in-triace (SCSI) to QEC-36 Tape outroller replaces NCR's ro-board ADP-54 model. "We did a redesign on it nd, using very large-scale tegration technology, got it own to one board," said thin Ast, OEM products

ting manager for NCR.

Like the ADP-54, the ADP-

atures a 64K-byte rity. ion or d ect, which allows other peripherals, according to pri-ority, to use the SCSI bus to which the tape controller is

well as retrieve data.
The new model, svails In October, comes in a singleended version, used with

and microuters, and a differential version, used with main-frames. NCR's suggested re-tail price is \$395 for the sin-

DEC cuts into **IBM** share

From page 35

not just CPU speed but a real ly balanced system, that is important," Mikita said, not-ing that major vendors appear to be addressing the disk-access problem and im-proving I/O bandwidths through a variety of means

while worrying less about hot-box vendors who boast of high CPU speeds. Mikita said DEC is a threat to IBM and that DEC's singleproduct-line strategy rought it up to second place in the medium-scale market in five years. "One of the interesting things is the per ception of DEC right now The perception of many peo-ple is that DEC is on a roll, but the underlying thought is that it is a temporary thing and that IBM will regain its

dominance," Mikita said.

IDC found that DEC holds
a lead in terms of unit shipments and largest installed base but trails IBM in shipment revenue, largely be-cause so many of IBM's ship-ments involve expensive high-end systems such as the 4381.

"Since the sverage system rice for IBM's medium-scale rings is higher than that of its mu rivals, Big Blue can make the most money without ship-

most money without anip-ping the most computers," the report said. Expanding on that report, Mikita said, "For IBM, the medium scale is right at the rder in terms of success. It is in the small-scale market where IBM's market really

falls apart."
Mikita noted that IBM's in troduction of four new mod-els of the 4381, including a low-end Model 11 aimed at the superminicomputer mar-ket, helped IBM's price/per-formance figures but not enough to have s major impact on the medium-scale market. He said that one of IBM's next steps, the intro-duction of s microprocessor-based 370 architecture mae, could have a greater

pact by driving the entry nt for that mainframe ar-tecture still lower. However, Mikita added, ere is no consensus on whether a mainframe archi tecture is suitable for the lower end of that market.

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attach to 3274/76 duster controllers or 4331 Display Printer Adapters without external protocol conversion devices. Both printers do compressed and expanded print, And interface for PC output The CX 3180 is a 180 cps workhorse designed for a 100% duty cycle.

The CX 3220 is a multimode printer that prints near-letter-quality text at 45 cps, as well as DP output at 220 cos. It also does high-resolution dotaddressable graphics.

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faster than normal.

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nterfaces to L_____

Software brings CAD to workstation level

By David Bright BAYTON, Ohio — NCR Corp.'s Mi-

ctronics Division has introaced two sets of software tools said to allow complete integrated circuit design at the workstation level. Called Vigen and Vilay, the products are additions to NCR's VLSI Design tem that runs on Mentor Graphics

Corp. workstations.
According to NCR Microelectronics officials, the new products cost-effectively bring mainframe comput-

workstation level Vigen is a cell generator and com-piler, Vilay is a design and layout tool with over-the-cell routing for high-density designs.

Developed jointly by NCR Micro-electronics, Mentor Graphics and Sili-con Design Labs, Vigen reportedly helps designers incorporate more functions on a chip than previously sible for workstations, decrease sign times and increase chip per-

When creating an application-spe-cific integrated circuit design with Vigen, the system designer can cus-tomize a cell by specifying the deed parameters.

The designer can also specify and generate a desired logic block "on the fly" while still in a schematic capture system. The generated cells can then be used with traditional fixed standard cells in schematic capture and logic simulation. In addition to the automatic place-and-route software and layout editor software, Vilay includes interconnect and timing anal-ysis postlayout verification tools and various utilities such as I/O preplace-

Vilay was jointly developed by NCR Microelectronics and Mentor With Vilay, "the desig

make important choices and refine his design at any point in the proct." said Gene Patterson, NCR S ustom director.

Both tool sets should be avail in the fourth quarter. Vigen is ex-pected to be priced at approximately pected to be priced at approximate; \$16,000 per system, Vilay at \$16,500

IBM 4300s next in line

From page 35

IBM's long-term plans.
If IBM bills the Micro370 as a If IBM bills the Micro370 as a replacement for the 4361, it will pre-sent a clear message for 4361 owner — they are doomed. But there could be other messages in a Micro370 an-nouncement. One such problem coul-

be an alignment of the Micro370 against the System/36. One analyst who says that such an alignment is unlikely to happen im-mediately is Francis Gens of Interna tional Data Corp. "The key for the Micro370 will be how soon they can get the software for it so they can make it a turnkey system and clim nate the need for a system operator That means that it might be a while before it is a real office machine Gens says. So the Micro370 will probably be promoted in the 4361's market, supporting engineering, sci entific and limited commercial appl

There remain at least two n interesting developments that IBM may bring to the public within the next month or two. The first is a newed effort to drive 4300 cu ers from DOS/VSE to MVS. IBM has been trying to do so for several years with limited success and is expected to use financial incentives to push harder. But, as Gens noted during a recent interview, the challenge for the IBM sales rep and the low-end systems user is justifying the cost and overhead connected with MVS

The second development is an ex-pected statement of direction relating to a long-term effort to implement a cross-system software consistency. IBM reportedly has formed a special team of software engineers to develop common inter faces and tools that can be used with all of its mainframe and minicomput er systems. The problem with this effort - expected to involve piece by-piece developments over the course of years — is that it sounds so much like what IBM has tried in the past. IBM has tried to make its systems communicate in the past and, despite all of the company's power and resources, links between the diverse product lines are far from wrinkle-free, to say the least

Lynk intelligent systems bow

From page 35

Lynk also unveiled two printers for the System/36 and 38. The Lynkwriter/224 is a 400 char./sec., 132-column dot matrix printer that emulates the IBM 4214, but operates at twice the speed, according to Pow-ell. The Lynkwriter/224 provides near-letter-quality printing at 100 char./sec. and text-quality printing at 200 char./sec. it will be available in September for \$4,495.

The Lynkwriter/214 LC is a 250 char./sec., 132-column, high-resolu-tion impact dot matrix printer that connects directly to System/36 and 38 channels and emulates all the ctions and features of the IBM 6219 printer for \$3,250

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Product Spotlight

Edited by Barbara Wierzbicki



INSIDE

Application generators and DBMS

Chart of selected application

Application generators Tools can give MIS a needed productivity boost

By GLOVER T. FERGUSON and PER O. FLAATTEN

Toward the end of 1983, the information sys-Toward the end of 1983, the information sys-tems department of Du Pont Co, based in Wil-mington, Del., found itself faced with a massive application backlog. To position itself for the development effort that would be required, the department undertook a project to create an insegrated environment to boost the entire systems life cycle productivity. A project team of five life cycle productivity. A project team of five people was assembled for this purpose. At the time, there was a well-established systems life cycle and an associated methodology, but both the development and the maintenance areas suffered from a proliferation of technologies, with each project manager tending to use the technologies — productivity tools, data base management systems (DBMS), teleprocessing monitors and so on — that

Ferguson is a partner in the Technical Services Organization of Arthur Andersen & Ca, based in Chicago. He is in charge of designing and support-ing systems development tools worldwide for the use of Arthur Andersen consultants on client en-oppensents. Plantles is Arthur Andersen's manage or in information probabilities and and and and or in the consultant probabilities are all the coner of information technology research, specia ing in the systems development tools market.

Du Pont's approach to the problem was to start by analyzing the application backlog in order to classify the types of systems that were likely to be developed over the following five years or so. Then, a technology plan was developed. This plan

stified, for the various types of tems, the technical architectures at would best address the backlog.
A set of technical guidelines was

A set of technical guidelines was prepared to support the project teams, and a compatible set of tools was acquired for each target environ-ment. When satisfactory tools were not available on the market, they were developed from scratch. These tools were then integrated under a common interactive programming en-vironment, combining functions

ranging from source program editing to code man-agement, and they were interfaced with an analys/design tool and a central data dictio Now, 254 years later, the project is in its final stage of rollout. An informal study shows that productivity has increased by at least 20%. More

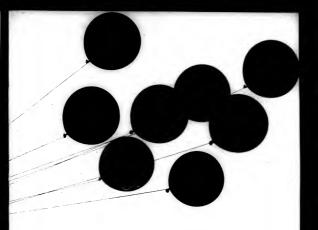
important. Do Pont says it believes that bigh quality systems are being developed. All MIS departments are under fire to produce

A dynamic duo/42

generators/49-50

Selecting and installing an application generator requires MIS to analyze requirements. design, code, test and train. In short, you must perform the work of a systems integrator.





NETWORKING

meridian sca-

boost MIS needs

Continued from page 39

To respond to the pressure from the executive suite and to step up production of new applications, MIS is looking to an increased use of tools tions, MIS is looking to an increased use of tool report whiters, application generators, fourth-generation languages — in order to boost productivity levels. The Du Post figure of 20% quoted earlier is less impressive than the five-, ten- or twenty-

fold increases in productivity that some ver fold increases in productivity that some ven-doors claim. Such increases may be possible but only under different assumptions or different circumstances. For instance, if the starting point is low enough, it is easy to produce dramatic increases in productivity. However, this happens mostly as a result of a combina-tion of factors, such as increased motivation. better training, new hiring and better system

development standards.

These factors tend to occur whenever a new tool is implemented, regardless of the merits of the tool as such. There is a theory that any change, however minor, produces an inc productivity simply by getting people to focus on what they do.

Another explanation for inflated figures is the tendency to measure productivity only on that part of the life cycle that the tool addresses. Por instance, a report writer user quoted productivity gains five to 10 times that achieved with Cobol. However, since report writing constituted less than 10% of the entire relopment activity, the total impact was con-

The last explanation is the vendors' natural ndency to report the most extreme success ories — the cases in which the application veloped, the organization and the technical ent all were a perfect fit for the tool This is too much to be hoped for in every case. Nonetheless, a 20% or 25% increase in productivity is a substantial improvement. For a typical MIS department of 25 project managers, typical MIS department of 20 project managers, analysts and programmers, where maintenance is occupying two-thirds of the department, the payback period for a representative application generator would range from one to four years — or a savings of, say, two developers. This is not to say that you can expect to decrease your head count by two, but you can avoid hiring

two new people. In other words, you get two opers for free. More to the point, it may enable you to plement a critical application in six months stead of nine — or it may allow you to e that critical application so that your sation can keep ahead in the competiti

Another hidden productivity improvement occurs when richer functionality can be deliv-ered for the same effort. In all these cases, the payoff can be considerably higher than the direct payroli savings.

When such tools are purchased without having planning and organizational measures securely in place, however, the results can be disappointing. Buying tools without investing in requirements analysis, selection, preparation, training, implementation and support has been tried: It does not work. The lesso drawn from Du Pont's success are twofold. First, it takes planning, time and effort to undertake such a project. Second, it cannot be done without dedication and commitment from

Before addressing application generators specifically, we must first hit upon a working definition of the product. To that end, this article includes those products that mechanise some or all of the activities usually associ ated with the detailed design and programming of custom applications.

To qualify as an application generator — as Continued on sease

Expert's Opinion

Integrating tools speeds and simplifies application building process

BY SHAKU ATRE

for an integral part of a data base management system. When these two components work in to dem, programmers can generate software that allows application programs to be written fast

tial files such as VSAM

r environment support feature.

Support of standard teleproces th as IBM's CICS, TSO and CMS.

such as IBM's CLCS, TSO and CLCS.
IBM STO emails for feature. With all these features, how the case of the CLC will be such that these features, how the case how effectively will these programs runt Effectivenees is noising the right thing; efficiency is dioting the ching pick, Application speciation in Landom with TSMS should provide us with programmer effectivenees but with about efficiency five the computer resources. Deriving the rise of the pick computer resources. Deriving the most benefit in computer resources. Deriving the most benefit in roma available resources may be one of the biggest magnetic challengers to application generation.

splementation.
The chief advantage of using an application merator integrated with a DBMS is that these old speed the application-building process quality important, applications are easily and sickly modified, thus minimizing debugging orbidene and thereby reducing maintenance or orbidene and thereby reducing maintenance



WHICH APPLICATION GENERATOR DID THESE DB2, IMS AND CICS COMPANIES CHOOSE? AT&T, BOEING, CATERPILIAR, DEERE, FIREMANS FUND, LOCKHEED, GREAT WESTERN SAVINGS, NABISCO BRANDS, NORTHROP, PHILIP MORRIS, RALSTON PURINA, ROCKWELL INTERNATIONAL, G.D. SEARLE, TENNESSEE EASIMAN, TEXAS INSTRUMENTS, UNION PACIFIC RAILROAD, WESTINGHOUSE

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A CHECKLIST FOR EVALUATING ADDITION OF WEDLICATION

Power of the language.

Cordon Store: High-Nevel Intending among applications. Screen selection by function law.

Validation and editing capabilities.

Error handling.

High-level constructs.

Total Control

Product compatibility with such prerequisite software as operating systematic product and data base management system.

Security, Third-generation lenguage interfaces (Cobol, PL/I): Can subjudgement to relate the intermediate of the consumption of the intermediate of the consumption of the intermediate of the consumption of the intermediate of

called from Cobol or PL/I programs?

Buts distincely support.

the data description facility cannot be qualified as a true dictionary. Support for relationships between records, files, programs, jobs and ac uter extensibility.

Marries content for example, held as production.

Bridge to other dictionaries and/or batch data entry in addition to the normal on-time data entry. Cook-reference moons and usefulness for maintenance analysis and

Vandersmant

report statisticy. Squarray of product releases and future plans. detence of a users group.

-

Reposting groups on screens, reports a

Multiple record types on the same file.

Array handling: number of dimensions; availability of operators handling entire simps as opposed to programming a top and using subscripts. Resistance operators — DELECT, JON, MITERSECTION; "set-et-e-dime" processing, for example, FOR EACH record WHERE.

result options provided for simple queries and reports. traction of multiple reports on a single pass of the data base or

E---

so of use. (This is not synonymous with ease of learning. Many easy-toproducts are easy to learn, because they can only do simple things. They existe not easy to use on medium to cornolers emblane.)

Unione Help and documentation.
Interactive, Interpretive vs. source generation-oriented.
Symbolic debugging.
Support for best conduction washing control.

Support for on-line testing ("scripting" or terminal simulation). Support for regression testing. Coexistence with present shop standards such as menu structure.

Consistance with present shop standards such as menu structure inction key usage and languages.

Interprise/application requirements.

Generates the type of application required, for example, transaction processing, management information and control, professional support. Supports concurrent data update and automatic recovery restart within application performance constraints.

Non-English language support where required,

GRAPHICS FOR WYSE

CODONICS

In dray the Pears had Pears

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Svenska PC World is the magazine 7,000 BM PC users rely on aix times a year for timely information on program reviews, user reports, new products, tests and recommendations.

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Mean Some Do ...

Continued from page 42 opposed to a screen or report genera-tor, a Cobol precompiler or a data dictionary — the product should ad-dress all four areas of application

Screen design.
 Report writing.
 Data base description and ma-

 Procedural code.
 The hallmark of commercial data processing requires that all these areas be addressed. This explains the success of application generators in this part of the DP community and sence from other areas such as

ications and so on.
This definition covers several

types of application generators: Transaction processing genera-tors, first and foremost, are well adapted to the on-line environment. Many of these products also generate Many of these products also generate batch programs, although this is not their primary strength. The environ-ment in which they operate is usual-ly the target machine vendor's DBMS and teleprocessing monitor—in the IBM world, it is CRS-DL/1 and, more isse world, it is CK3-DL/1 and, more recently, IRS-DB/DC as well, but not yet DB2. Therefore, they are very well suited to generating production-quality applications, with concurrent data base updates and extensive recovery/restart. This type of product has been popular for about 10

Years.
Fourth-generation languages
may well represent the most popular
type of application generator to date.
Historically oriented toward report
writing, these products usually add
their own file structure and are also
capable of generating on-line transactions to update these files. Thus,
they can support the development of
all aspects of an application—protoder the requirements are simple

The current weaknesses of fourth-generation languages lie in the areas of concurrent update and the areas of concurrent update and restart/recovery, which are either inadequate or costly to implement. However, several manufacturers have begun enhancing their offer-ings in the past year or so to include more and more production-like facili-

ese products, like the tra nime products, like the transac-tion processing generators, have seen available for 10 years or more foreover, fourth generation lan-puage popularity has been boosted by the advent of information center d end-user comp

Conseptebrative lather matters management such a product that hit before a refer to the surple such as the fast base end of the spectrum. Here, the contral facility is the DBMS, to which is added high-level language and tools such as screen painters and query and report languages. Production-quality appliposable to take full advantage of the underlying DBMS.

However, the insolvanture.

nderlying DBMS.
However, the implications of se-citing a tool from this category are expert than buying a transaction enerator or a fourth-generation has used, since the choice is primarily hat of a third-party tibide and ometimes a third-party tibide and ometimes a third-party tibide and generated and the control of the same not been and in not currently a same to been and in not currently a same to be and in not currently a formation of the control of the DM's offerings is as well integrated

" Selecting an application today requires that you hedge some of your bett. But if you get the right fit and if you adjeguard the insentment in the new tool with parallel investments in planning and organizational change, the payback period should be short enough to justify the acquisition.

or as complete as the products of the four or five leading vendors.

Source program generators work somewhat like the transaction processors but with a few important differences. Transaction processis erences. Iransaction processing erators very often produce tabl stermediate code invoked by a

er. Source program generators, on the other hand, produce source code in a third-generation language such as Cobol or PL/I, which is then compiled and linked into an executable

atch program or on-line module.

The advantages over the "inter
reted" approach are added porta
lity and better coexistence with

tions. The main drawback is that there is a potenti ly time-consuming compilation and link-edit process between coding and testing. With the interpreted approach, you can make a change and test it almost in the same breath. A perceived advantage of the source code generators is that there is an apparent safeguard against performance problems or bugs in the gen ator. Users feel that they can always, as a last resort, fix the generated Cobol or PL/I code, Such generated Cobol or PL/I code. Such products have existed for a long time, but their increased popularity is a recent trend prompted by the ever-decreasing cost of compilation. Each of these categories tackles primarily one of the four facets of an application.



Continue the previous new house and code - and adds facilities for the other three. These took vary in cities are backers, but their functional capabilities are backersly the care - with persentation in the continue of the

their own applications.

There are other tools that are often forgotten when discussing application generators. Since they do offer most of the functions of

application generators. It is pretinent to include them here.

Pfrst, there is the category correportion of the category corredors and the category corredors and the category corredors and the category corredors and the category corretegory corretions and the category corretions and the

ogramming environment for re-

partial application generating tools such as screen generators, query pro grams and report writers, data dictionaries and macro or shorthand preprocessors. There are also a num ber of tools that automate the first part — analysis, specification and design — of the systems develop-

ment cycle.

Last, halfway between application generators and application soft
ware (perhaps closer to the latter)
ware facilities such as decision support systems, spreadsheets and personal computer-based tools.

This completes the characterization of teaky is menductivity tool of

port systems, spreadsheets and personal computer-based tools. This completes the characterization of today's productivity tool offerings. The market figures for the product categories outlined above totaled \$500 million worldwide in 1894 and that figure is projected to grow 25% a year to reach \$2 billion in 1990, according to International Data Corp., a Framingham, Massbased market research firm. This expanding market offers a niethors of fast-changing products

based market research firm picked and picked and picked as picked on facilitation of the picked and picked on facilitation of the picked or a guisaling production-like facilities picked picked picked as a general picked picked as a general picked picked as a picked picked picked as a picked pi

Despite all this activity, however, it appears that there is not much more productivity to be glained from today's technology. Arthur Andersen says that there are three tradescore for this. The first limitation is more first three tradescore for this. The first limitation is ment life cycle is mechanism. We mend to integrate requirements analysis, specification, design, coding and testing in a single tool that will also permit project management, rehange control, seating to the control of the con

for years. The second limiting factor to that. The second limiting factor to the second to the reuse of standard functions. So far, only technical functions are related to the reuse of standard functions are the second second to the second second

ctal datas processing. The third technological restriction is the two styles on the two styles of the control o

cessing. This tumultuous state of affairs poses a dilemma to the vice-president of MIS who wishes to acquire an application generator. Will the tool that suits him best today also be best tomorrow? This quandry only gets worse when you consider that we may be on the eve of a breakthrough in new technology for the automation of systems development. It is easy to predict that things



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Weighed against the productivity

benefits are the visible and hidder costs. The purchase or lease price of the software is the main visible cost.

To this you must add the cost of vendor support, upgrading to future

releases, training and implementa-tion, personnel requirements and the

ware environment. In particu

will change; it is not so easy to pr dict how. To select an application nerator today will requ the right fit and if you safeguard investment in the new tool with parallel investments in planning and organizational change, the payback iod should be short en

he single most important crit rion for choosing an applica-tion generator is whether or not it will generate the type of application that you require. There are three basic types of commercial data pro-cessing applications: transaction

cessing applications: transaction processing — simple on-line data en-try and data base update with some reporting and very high perfor-mance, reliability and a valiability re-quirements; management and control — primarily accounting and acnting-rela ted applications; and onal or executive support -

o called strategic applications The second criterion is: Will the generated application run in my technical environment? On my main-frame? On my terminals or PCs? Under the requisite operating system Will I have to change my choice of

DBMS? My teleprocessing monitor? Many of these questions are only relevant if you have IBM or IBM

compatible equipment.

In most other cases, there is only one environmental solution and thus only one or two appropriate generators. Then the question becomes, Can I use the available tools at all? Since I use the available toots at all? Since most shops already have some toots, or at least shop standards and a shop culture, the generator must be able to adapt to the existing environment. A related concern is that of the

A related concern is that of the coexistence of the applications generated with the programs that are already running. This is usually mos critical for transaction processing.

such matters as the conv such matters as the conversational structure under CICS: Can I mix and match old and new transactions within a conversation? Within a par-tition or region? If the application must reside in another region, what operational difficulties does this

cause for the operator of the system in the user department? Can I interface to existing routines — or indeed augment the generator — written in andard programming language

The last tier of this selection crit ria is how much of the life cycle is covered by the application generator and other tools that can be integrated with it. This is not an easy question to answer, since practically all products tools up to desligate to committee the committee of the committee cycle. For example, there is a huge gap in the area of testing support, requiring you to purchase several products from different sources. It is difficult to predict whether different tools will behave with typergism - or whether they will coexist

here are a number of functions and features that are empha-sized by vendors of application gen-rators. Only you can decide wheth-rethey are important to you. Pick a small number of criteria that your

Pick a small number of criteria that your choice must meet. This will avoid the situation where the product is picked on the basis of 'gust feel' and justified by a creative checklist that stresses the preselected product's areas of strength and glosses over its weaknesses.

than one candidate should rem use a list of secondary criteria. This will avoid the situati quently seen, where the product is picked on the basis of "gut feel" and justified by a creative checklist that stresses the preselected product's ar-

on your own situation. If productivi ty improvement is your main criteri-on for picking an application genera tor, the following factors are the eas of strength and glosses over its

· Data dictionary support. . Power of the language.

The secondary characteristics that you select will obviously depe

lar, if you have a hardware-constrained situation, you should evaluate the resource utilization of the generator, both when generating and probably more importantly — when running the generated applica-tion in production. The real performance pitfall

mes when the application gene tor makes assumptions about the

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d from provious page tion logic and/or the data ructure that do not hold tru base structure that do not hold true. For instance, an application genera-tor might generate a data base do-cription for an inverted-list type of DBMS with an index for every field in the data base — just in case — most likely causing very high re-sponse times for update transac-tions. The balanced view on perfor-mance is that since hardware

ion generator is less and less nt — but there are always ions that are so demanding that they need to be coded with spe

cial care An application generator may not be a suitable solution for those appli-cations at a given time. If you are in

ech is to igher voi

ed that he could save substantial resources by creating a data base extract program to create a report file, against which or ma his report file, against which or ma his report writer to produce that the report writer he was using required a respect to be printed, he would have been using printed, be used have been using printed, be design of the contract of the presentation of the printed printed have been using printed, be design of the printed printed by the design of pour system. In fact, this should be design of

done before you even decide which parts of your system will be written using the generator. This is especially dangerous when using the genera-tor for problems that it was not intor for problems that it was not in-tended to solve. In particular, we cannot overstress the danger of us-ing an end-user-oriented product for

igh-volume transaction processing Yet another pitfall lies in not rec ognizing the problems of mainte-nance. In fact, since you can now produce applications faster than be-fore, there will be more code to main tain. One generator vendor quotes as example of a customer on the West Coast that has literally tens of thou

s of prog ams written in a tion language. It wo ome of the initial develsequence of such proliferation is that reuse and/or modification of a given

gram is endangered when you cannot locate it.

The most serious dangers come from inadequate management attention. There are two diametrically op-

posed dangers — raising expecta-tions too high and therefore becoming distillusioned with the product before it can prove itself and product before it can prove itself and insufficient prior and continued com-mitment. The latter problem appears to be much more frequent when in-stalling a source code generator than when picking a DBMS with its asso-ciated generators.

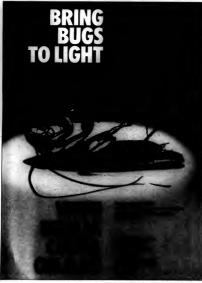
As one DP development manager confided: "We gravely underestimat-ed the impact that a Cobol generator would have on our shop. Maybe it's because, after all, it was only there to produce Cobol, which we were already doing by hand. Had we cho-sen to install a comprehensive information management system, such as those from Cullinet Software, Inc., ed Data Research, Inc. or Soft ware AG of North America, inc., we would probably have prepared our-selves much better. As it is, it was a miracle that we were given time to correct our mistakes and that the product we chose got off the

Another frequent problem hap-ens when the rollout process is not adequately planned and supported We have seen many shops where only the team that picked the tool and the one that used it initially, perhaps on a pilot project, reap the benefits. The tool may be unused by the rest of the teams, or it may be used halfheartedly.

n fact, if there is one lesson to be learned from the successes and failures we have seen, it is that the rocess of selecting and installing an pplication generator and associated sols deserves to be treated as any tools deserves to be treated as any other development project. It has all the same characteristics. It is noth-ing more than the automation of certain repetitive tasks normally performed by analysts and program-

To automate successfully, you ust understand all the functions erformed in your department as ell as their interactions. The san well as their interactions. The sam life cycle applies as in any other project. You must analyze require-ments, design, code, test and train; you must procure and install hard-ware resources. In a word, you mu perform the work of a systems into

perform the week of a system inter-pretation that the second of the sec





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In Depth

Lobbying for protection

Corporate users can defend their own rights

By JAY BLOOMBECKER

g: This is an article about semocracy is coming to uting. It is a challenge to those who would like to see it make no pretense of objectivity o assion — only accuracy. I want to be your blood boil and your face flush, elling you out of lassitude into revolu ary commitment. I want to turn the ance operators" into "cybernet-" — citizens of the information

It is invigorating, in this age of anomi uppies and nuclear despair, to learn that here are people who not only care ab nputing but who also have been able to turn their concerns into effective action. In the last year, four individuals — con-sultant Grey Staples, lawyers L. J. Kutten and Barry Bayer and myself — have mobi

lized the computer community in three ferent states (see story page 58). Smallunity in three diftime operators using our own petty cash for expenses, we went up against a \$50,000 corporate lobbying effort and won every

What began as an individual effort has expanded. Corporate users are raising their voices — and they are being heard. In a fascinating dialectic, the introduction of developer-sponsored software license legislation has been followed by the introduc tion of consumer-oriented software warranty legislation. For the present at least th types of legislation have been put on hold in favor of nonlegislative and econor lc solutions attempting to address the ex-pressed needs of both the developers of software and its individual and business consumers. The future belongs to those consumers. The future belongs to thos who join together to have their voices

Act I: Thesis

It all started with the Software Lice rement Act. Touted as an antipiracy bill, the act was passed in Louisiana in September 1984 with great fanfare. W. Krag Brotby, president of Vault Corp., a company that specializes in copy-protec-tion software, predicted that the law would de a model for the other 49 states. Vault had invested \$50,000, by Brotby's timate, in an effort to push the bill through, Alan Grogan, a respected comp er lawyer whose firm represents Vault, had drafted the bill. Donald Radoff, a publicist, had set up a clearinghouse for information out software protection legislation, par rularly the bill that Vault was pushing.

Press releases and interviews originating



with Vault led the media to repbill had been introduced in California. Georgia, Texas, Maryland, Hawaii and Aria. Actually, in three of these states the bill was never introduced. In the other three, it has gone down to defeat, at leas

Before declaring this result as a victory for consumer protection, a bit of background is necessary.

Making invalid contracts valid

In its simplest terms, the Software License Enforcement Act attempts to validate "shrink-wrap contracts." A look at the law and the equities of these so-called contracts demonstrates why this unusual effort to create new contract law is seen as necessary by the backers of the bill and why those consumers of computer goods and services who have looked at the bill have been almost unanimous in their opposition

Virtually all software sold for personal computers at the retail level is accompanied by these shrink-wrap licenses. Usually ent beneath the shrink wrap on the software package warns the buyer that opening the package or using the software is deemed consent to the terms of a "soft-ware license." These terms are a set of provisions written by a lawyer for the

One thing that the Software License Enforcement Act attempts to do is ensure that these documents are seen by state contract law as valid contracts. Often contract law quires an active meeting of the minds. In other words, unless you and I agree to the terms of an agreement, there is no agreement. I cannot, for instance, put a label on a book and say that opening the book is emed agreement to a license that

Precious little is done

to protect the rights of

individuals used their PCs to lobby against one-

and won. . Just think

how effective corporate

users groups might be.

computer users. . A few

sided "privacy" laws -

prohibits you from reselling the book or from giving it sway.

Yet that is the sort of agreemer hat the so-called software license eek to enforce. Whether the software licenses themselves are bindi

Enforcement Act is to get state atures to make the shrink-wrap es binding. It wants to change ates' laws to declare that ther the states laws to declare that thes licenses are valid agreements and that buying or using software to which these licenses are attached does constitute adequate meeting of the minds for the buyer to be held responsible for the terms that they

It is my legal opinion that con tracts require - and should require

Limiting the warranty is a way for the Limiting the warranty is a way jor in manufacturer to arold the responsibility of standing behind its product. It is a way of saying that if the software does not do what you reasonably expect it to do, that is too bad — buy another product, but leave the manufacturer alone.

 more knowing assent to their terms than just using a product that has a bunch of one-sided legalese on a document attached to it. These onesided licenses almost invariably take as much as possible for the manufac-turer and give as little as possible to the buyer. Most significantly, many of the contracts limit the warranty that accompanies the software

Generally, the law implies that a product will work for the tasks for which it is intended to be used. A word processing program is expected to do word processing; a spreadsheet program is expected to do spreadsheets. The effect of warranty isw is to say that the consumer is protected if the product purchased does not

Limiting the warranty is a way for the manufacturer to avoid the responsibility of standing behind its ct. It is a way of saying that if the software does not do what you reasonably expect it to do, that is too bad — buy another product, but leave the manufacturer alone.

The point I am making is that assemble folks have found this bil to be "sppalling," as Ron Beach of the North Orange County Computer Club (NOCC) put it, or that it "tram ples on the rights of consumers," omputer lawyer Kutten notes Under these circumstances, it seems fair to assume that at the verleast, users group members who buy software would be interested in knowing the provisions of the legis lation and having the opportunity to present their opinions to those conring the bill

It is truly astonishing to see the stimidating effect of words in our posedly sophisticated society Call a bill a piece of antipiracy legis lation, and normally same people will choose not to challenge it lest they appear soft on what has now clearly en communicated as wrong Some people seem to think that to

Some people seem to think that to be soft on piracy is tantamount to loosing all credibility in computing circles. In many critics' eyes, users groupe have been for piracy what brothels have been for prostitution. Piracy is wrong, if by piracy you can violations of the copyright

inw. How wrong it is, the most effec-tive way to combat it, how to protect the correlative rights of the software consumers and hosts of other equally vexing and complex questions re-main open and widely discussed. Despite misleading lobbying to the

entrary, the Software License Enent Act is not primarily s piece of antipiracy legislation. It is special-interest legislation designed to improve the economic position of software manufacturers without do

ing anything of substance to chal-lenge software piracy. In Hawaii, the state's acting director of consumer protection dispatched the connection between pl racy and the software license enforcement act pending in his state neatly. "The bill appears to be an antipiracy measure intended to protect the proprietary interests of soft ware manufacturers," Mark Nomurs of Hawaii's Office of Consumer Protection testified to the state's Senar committee on Consumer Protection and Commerce in 1985. "The bill does not appear to further deter pi-racy or address the primary problem — detecting the violator."

As the dust cleared over the shrink-wrap license battle (see stpage 58), California Assemb an Gioris Molina was addres nbiy woo an Gioria Molina was addressing the consumers' interest in microcomput-er software that worked. Molina, herself the unhappy buyer of a piece of software, introduced a bili into the California legislature that would require hardware manufacturers and software developers to guarantee product performance and reliability for six months following a sale.

Although they were able to lobby ccessfully against the Molina bill, me vendors and ADAPSO are conout the possibility of wide s. David Sturtevant.

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In Depth/Lobbying for Protection

ADAPSO's vice-president of public communications, explains that his association found the prospect of

association found the prospect of warranty laws most disagreeable. "We favor industrywide competi-tion in the area of warrandess rather than requiring that developers all the law and the same than the same than the Assembly woman Molina 'a' bit says. Surstevant addes that uniformi-yo I eigiatable is important to the software developer. The cost of en-try riesa." he notes, "if a developer has to next different requirements in each of 50 states."

Act II: Syst

Act IR Symbols The Symbols of The group Thealnest Evaluation through Strategic Cooperation (TESC) has been a prime mover in getting ADAPSO to attempt to deal with the warrasty problem in a non-legislative way, according to TESC Presidents Robert Corr. TESC, made up of 31 primarity Forume 100-level companies more from time to time companies to the time to time or the state of the

or commonly to discuss issues of the control of the

The union of the two group sulted in the formation of the ADAPSO Microsoftware Custo or Advisory Board. The b

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The Software License Enforcement Act is not primarily a piece of antipiracy legislation. It is special interest legislation designed to improve the economic position of software manufacturers without doing anything of substance to challenge software piracy.

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educational act tection and lobi head of the Ind er users, the "Providers of computer goods and services are organized. Information f computer users, then is. What success

"We're philosophically behind the "We're philosophically behind the dies of involvement," any Jonathan Rotemberg, president of the Boston. He was a state of the Boston and the state of the business of the business of the state of the state of the of the state of the state of the state of the temporary and of the state of the state of the president of the NOC.

September of MDA 190 and TESC indicate that corporate and other state of the st

legislative process. Increasingly, those in users groups can be expect-ed to affect legislation if their group choose to exercise the power avail-able to them. Sturtevant makes no secret that he chose the members of the ADAPSO advisory board with a view to representing as many differ

view to representing as many differ ent groups as possible.

"It is not an accident that the group represents a geographic dis-persion," he notes. "We tried to fine all the constituencies we could and still be able to have manageable

Meetings."
ADAPSO's efforts are not un ADAPSO's efforts are not unique. The Data Processing Management Association (DPMA) reportedly has established a committee to look into the issue of shrink-wrap licenses, say Joseph Collins, DPMA govern-mental affairs manager. "We've scheduled an article in the Data Manager [DPMA's membership mag-arine] to acquaint our members with the dimensions of the problems. Lat-er we will be online members to set er we will be polling members to get a sense of their reactions to the is-

sue."
Still, relatively few users groups, either on the individual or corporate level, are involved in attempts to influence computer policy issues. The theory of political involvement access quite rumoved from the practice. Precious little seems to be happening to protect the rights of computer users. A number of reasons, listed below, may explain this diff ence between theory and practice.

Logal foors and spati

There is no server in the control of the control of

out now a prouter got to seem of wit works."

The black box mentality of to-ity's computer users seems to spil rer into their attitudes toward po cs, Beach says. "The appliance of sators get a piece of software they



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In Depth/Lobbying for Protection

don't understand from a vendor they don't trust. If it doesn't work, they just say. They [the vendors] did it to

Since lack of interest may be a function of lack of information, ef-forts such as those of DPMA in alerting its members to the issues in-volved in shrink-wrap licensing laws are likely to be most useful.

Lark of la

Several users group executives oint to the lack of consumer prot tion laws affecting users as the reason that no action has been taken Software licenses and warranties are not the only issues that affect the interests of individual and institu-

tional computer users As computer crime concerns grow, more sophisticated bills dealing with the operation of bulletin boards such as the Texas computer cris law and the pending New York and federal laws — address issues of significance to a large portion of the user community. MIS managers, given the task of making sure that all computers under their control carry explicit warnings that entry into the system is unauthorized except under certain circumstances (as the pro-posed New York law may require), will certainly find that legislation of

will certainly find that legislation of great relevance.

Analogously, bills concerning tax ation of software and conditions un-der which VDTs may or may not be used are likely to affect many com-puter users in dramatic, if not underable, ways.

Perhaps one of the reasons that more issues are not coming to the attention of users is that users have no one looking through the bills that are introduced to see if, indeed, any of these do affect them.

Lack of landers!

From Boston to Silicon Valley. users group representatives report that the questions of lobbying and coner protection are free sion at board of director meetings. Why has this conversation not filtered down to the members?

Jerry Nightingale, executive director of the Silicon Valley Comput
Club in Santa Clara, Calif., urges

more leadership on this issue.
"Sometimes members need to be led There's not always demand for son thing until you give them something and then try to take it away." Mark Silvergeld, director of the Consumer's Union, a nonprofit con-

sumer affairs organization, suggests that if anyone is going to tackie consumer protection groups, it is oot going to be the traditional consumer protection groups. "Consumer protection groups. "Consumer groups are grinding out the old ba-sics," he says. "Intellectual property issues are too abstract for most con

One of the saddest ironies is the

fact that users groups represent the disorganization of the computer com ty, despite the many tools for on provided by com

"Considering that we all have computers, modems and word pro-cessing systems," Bayer says, "we should be able to turn out thousan of letters on an important issue. I can guarantee that 10 letters to a legislator will get him to think seriously about a bill."

Yet computer clubs are seen by many of their members, and eveo many of their leaders, as little more ed to letters it received, so will your professional association react to the ons of its members. It is often the silence of the me that keeps the leadership rs groups, the interes

than umbrella groups for individ-hardware, software or profession tend to be technology- or profes specific. With literally millions ons of sbers belonging to the varied users groups, it is truly astonishing that there is no vehicle for the groups' executives to communicate with each other about issues of com

mon concern, be they legislative, practical or technical There is no reason for things to stay as they are. Here are five possi-bilities for change:

The goose-your-group letter. It is asy to assume that your profession-association has things covered. goods and services as well as dissen ption is of Unfortunately, this as Unfortunately, this assumption is of ten not correct. As ADAPSO respond-

rship from pur-When I wrote earlier on this sub-

ect, it suddenly occurred to me that was part of the problem I was lescribing. As a member of the Boston Computer Society, I had not done

anything to make it responsive to the needs I thought important Self-enlightened - or at least ilty - I wrote a letter to Rotenberg proposing that the group study the possibility of gathering legisla-tive information of interest to con-

mers and producers of comting that information in a variety WAYS. enberg wrote back supporting

the proposal, suggesting that the so-ciety's Social Impact Group pursue it. After discussing the prop with Anita Micossi, head of that group, we have agreed to propose t Computer Update, the society's gazine, retain the services of a legislative research group to provide onthly reports of new pending leg-

In writing again on the topic, I raise the proposal once more. Clearly, legislative tracking is a function that a publication such as Cor world could easily finance. All it reoutres is a flood of mail from readers of this article and a continuation of the publication's determination to e its readership.

The computer users' consumer otection counsel. Why not institu alize the good work that the peo ple I have discussed have done? Let's



get a group of volunteers who com-mit themselves to watch legislation that might affect computer users and to communicate their findings to users groups. I will bet there are 20 L. Kuttens who would be delighted to be working for the good of the entire

computer user community, if only for a limited time period. Expanded use of policy groups. If lobbying is worth doing, it is worth doing right. TESC provides a model of consumers working togeth-er that many other non-Fortune 100 corporations could emulate. There is always the possibility of adding to a always the possibility of adding to a single group's impact by joining with other users groups to meet with ven-dors and discuss issues of concern. For example, TESIC does not involve itself in lobbying, but others could use the same structure TESIC uses toward that end.

In Depth/Lobbying for Protection

Legislators are more ignorant than evil. Let them know that you oppose a bill, and they will listen. One or two people's input can make the difference.

Where the issues are not of the endor-buyer variety but involve can join forces for lobbying efforts, as, for instance, the Association for Systems Management and DPMA do ect could demonstrate the value of lobbying, a serious, permanent com-mitment to the idea should follow. currently exploring the possibility of creating a lobbying group in Illinois. "If you want to lobby, you have to be there full-time," he maintains. " were clearly outsiders looking in. Again, it is sadly ironic that com rester users have taken so little advantage of the information proces ing resources that make lobbying arkably quick and relatively cost-effective. Companies like Publi Affairs Information, Inc. and Legi-Tech, both in Sacramento, Calif., of fer a variety of information service used on their on-line data bases of all bills and regulations in the 50 states. They will provide, on request access to their data bases, regular reports and copies of specific bills.

Charges are quite negotiable and can be tailored to the needs of the user.

These companies and lobbyists such as DeHart and Darr Associates in McLean, Va., offer representations at the state capitals. Personal representation is more expensive but still follows the laws of economy of scale

The most ambitious proposal to emnower computer users I have seen comes from California State Univer sity Professor Harold Sackman, the rman of the International Feder ation for Information Processing So-cieties' (IFIPS) Technical Committee on the Relationship between Comuters and Society

IFIPS consists of 45 national and regional organizations representing national computer activities in 57 atries. Sackman has proposed that this organization develop and launch a World Computer Users Group. This group would include "di fied educational and legal sup port for individual consumers of

computer services." he says According to Sackman, the group ould be "aimed at cooperative and shared social development of mas computer services with computer in dustry regulatory bodies informa tion service vendors, local governent, national government and

ternational organizations There is every reason for corpo rate and other institutional users to band together with individual com puter users on matters of mutual concern. As computing is democratized, the computer professional is already becoming a personal comput er consumer anyway. There may be situations in which loyalties are divided between the role of consumer and that of corporate user, but cer-

interests served will be the same sitment to the pro-As a participant in the legislative

process, I can personally attest to the thrill of having the wind in your face that comes from doing good and get-ting results. In addition, my political vement — and that of the others I have discussed - gives me a sense of security as a citizen in the

computer age. Legislators are more ignorant than evil. Let them know that you

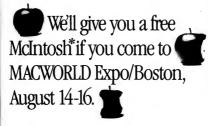
oppose a bill, and they will listen: As several of us have seen, just one or two people's input can make the dif-If we are to take seriously the challenge of the computer age, we must expect that laws and regula-

tions increasingly will focus on con ications, their uses and their users. The legislatures of our country can become the forum in which all those affected by these issues gather together to work out intelligent compromises

But it will never happen without your commitment and that of other users. If users groups can channel the energy of their members, a level of democracy in computing never before dreamed of can be achieved.

CORRECTION

The year of publication given for Edward Yourdon's Nations at Risk, excerpted in the July 21 In Depth. was incorrect. The correct year of publication is 1986.



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MANAGEMENT



Using systems to step up sales

n the business-to-business world of heated global competition, intense price wars and rapid product obsoence, the need for increased sales and marketing productivity has become

More and more large U.S. companies are staking their futures on market knowledge, taking their strategic cues omers rather than relying solely on input from research and de-

velopment, engineering, manufa A recent joint study on the maing shape of U.S. corporations by Coo-pers & Lybrand and Yankelovich, Skel ley and White, Inc. shows that as chief utive officers shift their focus outward rather than inward, they are betinning to tackle the complex challengs

of launching sales and marketing into the information age. The CEOs' new recognition of the portance of information-based sales ad marketing presents MIS with a challenge and an opportunity. The chal-lenge is both organizational and techni-cal: those MIS executives willing to meet it have an unprecedented oppo weapon for their corporation in the

From the corporate standpoint, who is needed is a system that enhances the productivity of each individual sales sentative and selling channel. This system must also leverage the pro-See USING page 66

marketplace

Khuen is president of Adelie Corp., which provides corporations with ser-vice, systems and support for sales and

DP solves merger puzzles

Bank exec notes benefits in the economies of scale

Stanley Gibson BOSTON — Bank mergers do not hap-

pen when two data processing managers et, find they have a lot in com inform their respective presidents that it would be great if their banks merged.

Instead, data process usually called upon to fit together the neces after a bank merger deal is completed. True to its nature, data processing is nearly always in a supporting

"Operations are not a critical part of bank Imerteri discussays Philip F. L'Heureux, chief information officer for the Bank of New England

L'Heureux has played a pivotal role ace Bank of New England NA completed its merger with Connecticut Bank and Trust Co., creating the Bank of New England Corp. in June 1985. He continues to quarterback DP support as the bank, now

with \$18.25 billion in assets, acquires more banks throughout New England. It acquired Maine National Corp. and Old

Colony Bank of Providence, S.I., in December 1985. Currently, seven more acquisitions are awaiting regulatory approval; L'Heureux has a data processing action plan for each. Although data processing was not a mo tivating factor in bringing about Bank of New England's mergers, DP economies of

scale have already been an important benefit of the mergers. Both banks had projected large increases in staff, but a year later the DP payroll

s unchanged as consolidation has made an increase unnecessary. For Bank of New England, it is not a case of less is ce, but rather, the same is

L'Heureux, 44, began his career as a programmer at Con-necticut Bank and Trust in 1968. Before becoming chief information officer at Bank of New England, he was bead of operations at Connecticut Bank and Trust. Immediately following merger, he was appointed to the newly cre-ated position of chief information officer. His office, situated on the 36th floor of

ston's Bank of New England building.

commands a panoramic view of Beacon Hill and the Charles River. Il and the Charles xxver. in a sign of the stature of data process-See DP page 65



INSTANT ANALYSIS The most suc-

cessful applications of advanced office technology occur when users are taught how to operate the machines and are then left essentially on their own to figure out ways in which the technology can be applied to improve the handling of

their jobs.

On-line service speeds translations

By Mitch Botts
To speed business transactions with foreign clients, a variety of companies have turned to an electronic mail service that provides on-line translation of docu-

Neil Wiggin, director of exports for J. H. France Refractories Co. In Snowshoe, Pa. knew the \$12 million brick maker would need a translation service to help it pene-trate international markets. "The value of translation was clear to us. We knew peo The value of

ple were most comfortable doing business in their native language," he said. But "it's like trying to find a needle in a

haystack to find people who can do this kind of translation work," Wiggin noted Consequently, he turned to a new service called Globalink that links professional translators with businesses through vari-

ous electronic mail networks. Globalink, a 1-year-old start-up compa-ny based in Oakton, Va., receives docu-ments through electronic mail, telex, fac-sumile or modem and then routes them to free-lance translators in its network. The

Globalink operations center for quality control and routed to the recipient

translated document is then sent to the

MANAGEMENT MEMO Trends: Women's pay lagging; DP turnover 'whopping'

Women who work in information centers are consistently paid less than the men there, according to the 1986 Report on Information Centers, a survey by the American Manage-

rs, men's sala-Among staff members, men's sala-ries average \$38,700 and womeo's \$30,400, secording to the survey. For managers, men get an average of \$46,600 and women \$39,200, accord-

ing to the survey.

The study found average pay to be \$40,100 a year — \$35,800 for staff and \$44,500 for managers for professionals at information cen-ters, which provide training and support services for end users.

The survey also found to tion centers are growing to keep up with expansion of end-user comput-ing, with more centers being created and existing ones getting bigger. It showed a 15% increase in informa-tion center start-ups over 1985. Re-

spondents expect an average growth of 20% in staff, bringing the number of employees to an average of eight per center by year's end.

Information systems depart-ments are not leading development of artificial intelligence, according to a pair of New Haven, Conn., con-

About 40% of the largest 500 com-nies are pursuing Al, but the work

is usually led by advanced technology staffs, research and develop ment departments or end users, ac-cording to Software People Concepts and Al Services Co. Software People President Rog

Sobkowia says the trend mirrors the introduction of data base systems office automation and pers outers. "Again, it seems MIS is miss-ng the boat," he says.

Information systems managers by nature cautious, feel they have their hands full and view Al as nov-el, complex and costly, says George Halrston, president of Al Services.

tition for qualified workers, ac-cording to another recent survey. Edward Perlin Associates, Inc. of New York puts the turnover rate at a "whopping" 17%, down a notch

from last year's record 18%. Managers are trying to cope by of-fering rasses and promotions, ac-cording to Perlin. Among the 48 large companies surveyed, the cost of pay and incentives for data pro-

cessing staffs rose 10%. The average entry-level salary is up 7.7% to

A data processing shop with 400 workers could spend as much as \$2 million a year on expenses related to staff turnover, says Perlin consultant Peter Tamblyn



AUQUST 10-16

ional Ninth An nual Conference. Snowmans, Colo., Aug. 11-14 — Contact: AM/FM Inter-national, Suite 820, 8775 E. Orchard

nationas, Suite 220, 8775 k. Orchard Road, Englewood, Colo, 30111. AAAI-86 Fifth National Confer-nece on Artificial Intelligence, Phil-adelphia, Aug. 11-15 — Contact: AAAI-86, The American Association for Artificial Intelligence, 445 Bur-gess Drive, Menio Park, Calif. 94025. Data Communications: Funda-mentals and Beyond. Boston, Aug. 13-15 - Contact: The Ame stitute, Carnegie Building, 55 Main St., Madison, N.J. 07940. Also being St., Madison, N.s. Urero. held Aug. 20-22 in Indianapolis. Naving and Selling Rights to

Atlanta, Aug. 14 — Contact: Data-Tech Institute, P.O. Box 2429, Lake-view Plaza, Clifton, N.J. 07015. Also being held Aug. 15 in Philadels Aug. 18 in Boston and Aug 10 on and Aug. 19 in Chi-

AUGUST 17-23

on Computer Graphics and Interac-tive Techniques. Dallas, Aug. 18-22 — Contact: SIGGRAPH '86, Conference Management, Smith, Associates, Inc., 111 Drive, Chicago, Ill. 60601. E

The Institute on Artificial Intelligence and Expert Systems. Waltham, Mass., Aug. 18-22 — Cootacthoun, Marsick, Seminar Coordination Office, Suite 415, 850 Boylston St., Chestnut Hill, Mass. 02167. Also being held Sept. 29-Oct. 3 in Chicago.

ing held sept. 20-UC. 3 in Conxego.
Advanced Communications Architectures Seminar. Washington,
D.C., Aug. 19-20 — Contact: Communications Solutions, Inc., 992 S. Saratoga-Sunnyvale Road, San Jose, Calif.

DEC: The Next Five Years. New York, Aug. 19-20 — Contact: The Yankee Group, Seminar Division, 14th Floor. 89 Broad St., Boston, Mass. 02110.

al Physical as 4ty Symp ia. Aug. 19-21 ct: Michael C. Otter Allen and Hamilton, Inc., 4330 EastWest Highway, Bethesds, Md. 20814. EDI Training Session. Arlington, Va., Aug. 21-22 — Contact: TDCC, 1101 17th St. N.W., Washington, D.C. 20036. Also being held Sept. 25-26 in Arlington

AUGUST 24-30

The Third International Congress on Advances in Non-Impact Printing Technologies. San Francis-co, Aug. 24-28 — Contact: Society of Photographic Scientists and 7003 Kilworth Lane, Springfield, Va. 22151.

Interconnect '86. San Mateo, Calif., Aug. 26-28 — Contact: Agnes M. Pavel, Program Director, U.S. Telecommunications Suppliers Asso-ciation, Suite 1618, 333 N. Michigan Ave., Chicago, Ill. 60601.

Service speeds translations

From page 63

The service is available through a variety of electronic mail systems, including MCI Communications Corp.'s MCI Mail; Compuserve, Instern Union Telegraph Co.'s Easylink; Readers Digest Associations erve; western Union Telegraph Co.; Easylink; Readers Digest Associa-tion, Inc.'s The Source; and ITT Dial-com, Inc.'s Dialcom. A flat rate of 3 cents per character, plus \$4 for han-dling, applies to all translations. "We can get the information."

Wiggin rapidly to our customers. "no matter where they may be in the world. Just yesterday I sent s letter to be translated from Spaniah into English, and I had it back within an hour or so, translated and ready to Typical translation services may

take three days to translate a docu-ment and return it by mail or courier, but Wiggin said the on-line service es a turnaround time of an hour for most letters and 24 hours for lengthy, technical documents. By speeding up business transac-ons, Wiggin said, the service gives

his firm a competitive advantage over slow-moving rivals. Further-more, using translated documents fosters clear and unambiguous business communications, he said.
"Many times there's a mis

standing between people on con-tracts," he explained. "You ought to have the contract written in the lan guage of the person who's going to be working with it. It's better to have it

working with it. It's better to have it in their language to avoid misunder-standings." he said. David Bremmer, an executive with the Spencer, Bennett, Nowak advertising agency in Seckonk, Maass, said her first used Globalink to handle technical ad copy. "It's important to be able to promise a client fast, accruate translations." he said. "It makes us look good."

Late last year, St. Louis-based Kangaroos, Inc., a footwear importer, recognized that its business with Italy was intensifying and required frequent translations of correspondence and legal documents, according to Richard Rosenberg, assistant direc-tor of marketing. "Through Globalink we are able to provide a special courtesy to our business with the Italians and other international contacts" he said

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DP solves banks' merger puzzle

From page 63

ing operations in the corporate hier-archy, the 36th floor is headquarters for the Bank of New England and houses the holding company's princi-pal officers. L'Heureux's office is adacent to that of John Carusone, se vice-president of corporate works closely in devising merger

strategy. "We have a close personal and ofessional relationship," says Car-one, who was vice-president of strategic planning at Connecticut Bank and Trust when L'Heureux was tions there ead of oper

At the outset of merger discus-sions between Connecticut Bank and Trust and Bank of New England, officials of both banks agreed that neither bank would sequire a new piece of technology or software without discussing it with the other. ureux says

To develop a complete game plan prior to the merger, consultants from Arthur D. Little. Inc. of Cambridge. Mass., interviewed officials of va ous departments at the banks. They wrote up 18 short-term issues and ons, which resulted in a formal plan that was finalized in October 1985.

"You've got to have a plan and tie it into the strategic as well as the tactical plan of the bank," says George Rockwell, head of financial consulting at Arthur D Little

The plan determined that both banks had certain stengths that could be built upon. For example, Connecticut Bank and Trust had a strong retail and community banking culture and consequently was select-ed to be the DP headquarters for that area. Old Colony Bank was strong in mortgage banking and was chosen to be the center for that function. Bank of New England had been strong in

mmercial banking and theref became the corporate headquarters We're not closing down opera ns for the sake of consolidation

but are trying to maximize the assets of each location." L'Heureux says. The bank's two major data cer ters, each of which contains an IBM 3090, are in Malden, Mass., and East Hartford, Conn. There are additional centers in Rhode Island, western

Massachusetts and Maine, and all are tied together with TI lines.

With the establishment of the data enters and their specialties, the centers are managed in what L'Heureux calls a centralized-decentralized anproach. Although the major planning is centralized, numerous details are left to each local center. "If someone wants to hire a programmer, they know best whether they should or not," L'Heureux explains. Purchases greater than \$500,000, including the amount of projected savings, must be rought before a companywide com

One example of how the bank has made the same number of employees go further is the payroll department. Before the mergers there were nine programmers doing payroll, three in each of three locations. However, after locating the payroll center in East Hartford, the bank moved three pec ple to join the three already there and shifted the other three payroll programmers to work on new DP pro-

The bank was able to draw on the experience of operating a successful computerized installment loan system in Connecticut to start up a simi lar system in western Massachusetts without hiring additional staff.

The bank achieved a major con-solidation on June 15, 1986, when all the automated teller machines (ATM) of all the merged banks were tied to gether so that any cardholder could use any ATM in the system. In con necting the ATMs, a multivendor so different makes of machines at the various banks and the impracticality

of replacing them. Another consolidation will occur when L'Heureux chooses a companywide installment loan system to replace the six systems currently in place, which will greatly reduce the total software support burden, say ing time and money, he says.

L'Heureux not only has to deal with the variables of the bank's strategic planning and such nuts-and holts issues as connecting various computers, but he must also handle personnel at an acquired bank

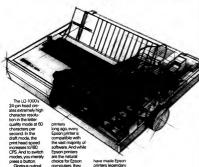
'It's important not to be too disrupti

"Each bank is different. It's a very subtle thing, trying to understand the cultures. It's very important not to be too disruptive," Rockwell says. An example of redirecting existing employees to advance corporate of jectives occurred at Old Colony Bank At the time of acquisition, the bank's old Sperry Univac mainframe was out of date and incompatible with Bank of New England's other sys tems, in addition, there were (and were expected to be) few Univac assembly language programmers in the Rhode Island area. The computer was sold, and mortgages are now handled by a service bureau in Dallas. here was apprehension

first," L'Heureux says of the employ ees' response to the changes in Rhode Island. However, ali 12 Old Colony programmers are still employed in Rhode Island, working on projects for the Massachusetts or Connecticut data centere

Not only does the move add to the bank's bottom line, but L'Heureux sees benefits for the programmers as well. After retraining as Cobol and CICS programmers, the switch gets them on a promising career path and out of dead-end positions program ming the old Univac





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MANAGEMENT

Using systems to step up sales

ductivity of all groups under the sales and marketing umbrella so that

total corporate sales and marketing oductivity can be optimized. To achieve this goal, each group within the total sales and marketing ration — field sales, marketing munications, sales promotion, o rketing, telemarketing and istration - must work er efficiently. All must share rmation learned through tact with the cust erage their actions for success. is approach allows the corpora-

up and implement a comprehensive central data base that the dispurate ours within sales and marketing ld be willing to use and share and that MIS could realistically be

expected to support.
In addition to the challenge these intrafunctional barriers provide, other functional areas within the corporation should ideally be linked to sales and marketing. Although order entry, customer service and billing information exist at the corporate level, attempts to use that information for active marketing and

es have usually fallen short. An integrated system designed to leverage sales and marketing produc tivity should incorporate four vital

ownership. Central control allows ap and rev wery and encourages operational discipline ar reliability. However, local owner

is essential to winning the cooper tion and participation of the field sales force.

 The system must offer both tructure and flexibility. Structure of course, is essential to facilitating the transfer of information in an orderly fashion. It also ensures that reports will be consistent over time Flexibility is essential to allowing for quick response to changes in pro-grams, territories and promotions nd to supporting the ease-of-use

and to supporting the east-of-size features users demand.

• The system must focus on sup-porting — not managing — each of the participating departments. Big Brother systems designed to allow

management to track sales performance tend to attract questionable

. It must be able to go on-line without requiring that sales and marketing organizations be reorgaed or change their objectives.

While these characteristics sound difficult to realize and indeed repre-sent a technical challenge, they can be achieved by combining the best of currently accepted personal comput er, mainframe and communication technologies. The nature of such s system is not hard for an MIS direc-

It will offer networked, ren processing structured around a cen-tral marketing data base that operates on the corporate central mainframe. At the same time, it will be supported by operation-specific spplication software that meets the support needs of particular groups within sales and marketing.

Integration at work

Integration and the use of a central data base sets up a synergy cy-cle. In company after company, the more each department uses the sys-tem, the more information goes into the central data base and the better that central data base becomes. In turn, the more comprehensive the data hase becomes, the more people use it and benefit from it.

Instead of overlap, confusion, de lays and conflict, integration im proves communication, boosts moahead in productivity and profits. When advertising and promotion personnel know the exact impact of each advertisement and trade show lead, higher returns on the advertis ing investment become possible

At an instrumentation company, when sales representatives were supported with timely account status reports, customized personal letters for prospects and accurate lead assignments, they reported sales in-creases of more than 30% each and were able to handle nearly four times the number of acco

Automating sales and marketing ulso allows MIS to demonstrate its stential to develop a system that is in effect a corporate strategic weap on, one with an impact on both prof-Itability and market share. Taking a eadership role in sales and market ing productivity improvement offers MIS the opportunity to implement corporate business objectives and, at the same time, gives corporate man-agement the competitive edge needed in today's tough business environ-



When it comes to harmony in office automation, most vend simply don't know the score.

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Let us help you get your busine communications in tune with today. Write Datapoint Corporation, MS/K-39, 9725 Datapoint Drive, San Antonio, Texas 78284.

DATAPOINT



NEW PRODUCTS

stores, shows color pictures

Information Builders, Inc. of New York has announced Focus Vision, a personal outer data base management system said to capture virtually any image and display it as part of a PC/Focus data base

Focus Vision reportedly permits fullcolor pictures and graphics to be captured, stored and displayed along with standard text. The image can be made to be any size and can be placed anywhere on the screen. Video sources include camera, vide sette recorder, videodisk or compact disk According to the vendor, applications built with PC/Focus can add Focus Vision without having to be redesigned. Focus Vi-sion also contains new Focus language commands that are said to be easily em-

commanies that are saud to be easily em-bedded in pre-existing applications. Pocus Vision is offered in two models, System 1000 and System 2000, both of which require PC/Focus Version 2.0 and an IBM Personal Computer AT or compatible computer, a 10M-byte hard disk and 640k bytes of main memory. Focus Vision System 1000 is intended

for capturing existing images produced by other software products and making them part of a PC/Focus data base. Focus Vision

System 1000 software costs \$750.

Focus Vision System 2000 reportedly will capture new images into the PC/Focus data base and will allow the capture, storage or display of live or prerecorded video images as well as images from other soft-ware in up to 256 colors.

System 2000 is available in two mor capture and display and display only. The capture and display version of Focus Vi-sion System 2000 requires the Focus Vi-sion System 2000 software — priced at sion System 2000 software — priced at \$996 — an ATAT Image Capture Master Board, a Quadram Corp. Palette Master board, two red-green-blue (RGB) analog monitors and a video camera and recorder. The display-only version of System 2000 requires Pocus Vision System 2000—D soft-ware — priced at \$395 — a Quadram Pal-ette Master board and an RGB analog mon-

PC/Focus Version 2.0 will reportedly be available at the end of the third quarter. Version 2.0 costs from \$798 to \$1,296, depending on quantity. Pocus Vision will be available in the fourth quarter.

Focus Vision | PBX capabilities enhanced

Messaging system cures office communication ills

Integrated Telecomputing Systems. Inc. of Sunnyvale, Calif., has introduced its Advanced Messaging System, said to pro-vide Centrex users with private branch ex-

The Advanced Mes the Advanced messaging System, which also works with PBXs, consists of a full-featured telephone called Message-phone; the PC Message Attendant Station, a phone messaging system that can be linked to an IBM Personal Computer; and

the Messagereader, a text-to-voice synthe-sizer installed in an IBM PC. An optional interface, ITS/LAN, also is The Advanced Messaging System is

priced on a components basis, a company spokesman said. Messagephone costs \$700 for one line with a modem and \$800 for three lines with a modem. The Messagemader mate \$4 000 The Advanced Mes

The Advanced Messaging System is in sided to solve such office communication tended to solve such office communication problems as telephone tag, misdialed num-bers and unanswered calls. The system is designed to enhance the features of PBXs and Centrex services, making these features more accessible and easy to use, according to the vendor.

The Messagephone and PC Message At-

tendant Station are plug-compatible with most Centrex and PBX systems. Working with these systems, the Advanced Messag

ing System can perform advanced functions such as call transfers, conferencing, camp-on, call forwarding and call pickup According to the vendor, the core of the Advanced Messaging System is the



Messagephone, a messaging telephone that can perform message storage and retriev-al, automatic dialing of telephone numbers in messages, identification of incoming calls and automatic dialing of 200 or more

preprogrammed phone oumbers.

Messagephone also features a full keyboard with programmable keys, a threeline, easy-to-read vacuum fluorescent display and a built-in 300 bit/sec. modem. It also has 32K hytes of random-access memory, allowing storage of up to several hun-

The system offers advanced me tween Messagephones in the same offine allowing many to send memor and queries back and forth. Users also key in

atus messages, such as "out of office" or sack at 3 p.m.," and self-reminder notices hat the system displays at preset times. The Advanced Messaging System also ffers voice mail capabilities through the Messagereader, which converts ASCII text into speech, said a spokesman from the

A special password keyed into the Mesreader by the user allows remote access to stored messages on a standard Touch-Tone telephone 24 hours a day.

INSIDE

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Proce Reductions/76

Realfile expands PC file sharing

Realis, Inc. of Chicago has ann Realfile, an operating environment said to extend the file-sharing features of PC-DOS on the IBM PC Network and compatible networks.

Realfile supports sharing of indexed

files among multiple machines. A central journal communicates task record locks, current positions and block alterations. In-formation in the journal allows Realfile to locally cache data from shared files.

traffic, makes the most of local file cach-ing and ensures the distributed caching be-haves properly when multiple programs are accessing the same file, said Ken Beicher, Realia president. The Realfile operating environment is

priced at \$150. A three-pack is available for \$295. Puture upgrades will be available for a per-copy upgrade fee. Realfile runs on the IBM Personal Computer, Per-sonal Computer XT, AT, 3270 Personal Computer and compatible system

HP offers enhancements for Integral Personal Computer

Designed for EPROM placement of programs

Hewlett-Packard Co. of Palo Alto. Calif., has introduced three product enhancements for its HP Integral Per-sonal Computer.

The enhancements feature the HP

82968A erasable programmable read-only memory/read-only memory (EPROM/ROM) board, the HP 82971A EPROM/ROM module and the

The enhancements are said to allow the HP Integral PC to store C, Pascal, Portran 77, HP technical Basic software programs or data files in EPBOM, programmable read-only memory (PBOM) or masked BOM.

According to the vendor, the en-hancements can also be loaded into the Integral PC's random-access memory (RAM), then executed. Turnkey secure systems can be developed for harsh environments as well as re-HP 82968A EPROM/ROM circuits and is installed in the Inte gral PC's operating-system ROM

Holding up to 256K bytes of EPROM, the board is well suited for customers who want to place small programs, utilities, RP-UX scripts.

data files or I/O drivers in EPROM 82968A EPROM/ROM board is priced

With sockets for 16 custo ected ICs, the HP 82971A EPROM/ ROM module may be installed in ei er of the Integral PC's two I/O

ports or an HP 82904A bus expander The HP 82971A EPROM ROM module costs \$295.

The HP 82970A software developent tools, priced at \$195, include a software otility disk and a tutorial

manual that give customers the ability to transfer programs or data files into EPROM, according to the vendor Software drivers are reportedly provided to communicate via the HP Integral PC HP 82919A RS-232C interface with EPROM programs vices such as a Data I/O Corp. Data L/O Model 29B

NEW PRODUCTS/SOFTWARE & SERVICES

SOFTWARE & SERVICES

lis, Minn, 55420

nounced that Autocad Version 2.5 Autodesk. Inc.'s two-dimensions

Autodesk, Inc.'s two-dimensions computer-aided engineering, design ed drafting software, is avai he company's Sun 3 family of work

The Autocad Version 2.5 offering creases Sun's offerings in mechani

cal, architectural and engineering de

Ventureous, Inc. has announced that its Prelude Information Management System supports AT&T's Unix System V Belesses 3. Prelude in said to be a comprehensive system for developing software tailored to specific, data-intensive applications. When combined with local System System for developing software applications. When combined with local system of the state of the

tion system costs \$1,800 for a two-user configuration license.

215 First St., Cam

Datasex, Inc. has introduced the E2Com-3770 systems network architectural (SNA) remote job entry subsystem for Digital Equipment Corp.'s VAX/VMS and Microvax/MicroVMS

FZCom-3770 is said to em IBM 3777 Model 4 SNA/RJE workstation functions and uses DEC inter-faces such as the DMF32 synchronous port for VAX systems and the DPV-11 interface for Microvax. EZCom-3770 costs \$3,500 for Mi-

wax and \$7,500 for VAX systems. Datanex, P.O. Box 1728, Eugene,

CFS, Inc. has announced Release 6.7 of its Display Operator Console Support (DOCS) package for IBM

mainframe sites.
One of the extensions provided in
DOCS 6.7 is a command that displays job accounting data accumulated for each active partition, as well as summary performance data

The other extension is a o that displays all or selected 1/O units ent in the DOS/VSE system.

Fields displayed include the chan-nel and unit address of the unit and the volume serial number of tape or disk devices. DOCS 6.7 costs \$7,610. CFS, 1600 VFW Pkwy., West Boxbury, Mass. 02132.

Applications packages

McDonnell Douglas Information Systems Group has announced Solid Modeller and Architectural Site eller (ASM) architectural software packages for its Graphics Deci-

sion Systems product fami Solid Modeller reportedly creates three-dimensional designs by combining geometric shapes and sweep-ing, revolving and extruding two-disional elements. It is priced from

Architectural Site Modeller generates 3-D models of proposed building sites. It is priced from \$10,000.

McDonnell Douglas, P.O. Box 516, St. Louis, Mo. 63166.

Control Data Corp. has added Ed-Layout, a printed-circuit board layout package to its Cybernet Express

The Ed-Layout software is said to ovide electronics engineers with

nign to more than 80 third-party soft-ware and hardware products.

The Autocad software on Sun's 32the tools for creating, editing and do-cumenting actual drawings neces-sary to build a printed-circuit board. Included in E6-Layout are a number of utilities that speed board defini-tion, placement of board parts and

Sun Microsystems, 2550 Gar Ave., Mountain View, Calif. 94043

Languages

Force Computers, Inc. has intro-duced a Pascal compiler under Unix, as part of its VME-based Unix V mi-

croforce series.

Pascal under Unix, said to generate fast and compact code, is enhanced by strict compile and runtime error checking. Pestures of the package include a source-level interactive debugger and Pascal profiler support to identify program bottlenecks.

A single unit isomose for Pascal under Unix costs \$600.

Porce Computers, 727 University

Whitesmiths, Ltd. has released Version 3.0 RSX-11M Pins C and Pas-cal compilers for the Digital Equipent Corp. PDP-11.

New ANSI features of Version 3.0 new ANG transaction of the control o

Additional reatures include: Cource-level interactive debugging with breakpointing and variable display and operating system-specific library functions in source-code form. Version 3.9 ESX-11M Plus costs \$1,000 and \$1,300 with Pascal. Whitesmiths, Concord, Mass. 01742.

If the space program had advanced as fast as the computer industry, this might be the view from your office.



NEW PRODUCTS/SOFTWARE & SERVICES

Utilities

Plum Hall, Inc. has introduced the Plum Hall Validation Suite, a set of C programs for testing and evaluat-ing C compilers and interpreters. The Plum Hall Validation Suite for

C was designed to test functioning of required features. The first subsection evaluates language features, and the second subsection tests operator

Other features of the product in-clude a compiler capacity test, an ex-ecutive interpreter that is a script language processor, expression gen-

erator and coverage.

Source license fees for up to 20 programmers are priced at \$4,500; the conformance section alone costs \$2,200.

um Hall, 1 Spruce Ave., Cardiff, N.J. 08232

A graphics and technical analysis system called Teletrac has been an-nounced by Telerate, Inc. Said to function on a specially de-signed microcomputer, Teletrac is a front-line trading and analytical tool

ners in the foreign exchange and fixed-income money markets. Tele-trac is received over high-speed satlite or leased telephone lines or can e piped into video switching sys-

- Teletrac leases for \$960/mo for color monitor and \$795/mo for mono-

chrome monitor.
Telerate, One World Trade Center, New York, N.Y. 10048.

Network Corp has introduced Dialogue, a set of products said to allow access to Re-

cord Management System files on Digital Equipment Corp. VAX or Miers through the use of

With Dialogue, users can create screen forms, menus and reports. Programmers can use Dialogue's li-brary of subroutines to facilitate I/O. Dialogue programs can be used as subroutines called from third-seneration language programs or by themselves for file mair

Dialogue costs \$2,000 on Microvax, \$10,000 on a VAX 750 or 780 and \$23,500 on a VAX 880. Computertime Network, herst St., Nashua, N.H. 03063.

rated Versaplot 9.2, plotting soft-re for outputting data from Prime

Computer, Inc. computers.

Output can be to a magnetic tape Versatec monochrome or

plotter. Integrated Versaplot 9.2 offers Prime users pen-plotter program call capability through Fortran-callable subroutines, user-adj clipping window and plotting view-port and support of Versatec 511A output multiplexer for use of multiple plotters.

Integrated Versaplot costs \$4,000. Versatec, 2710 Walsh Ave., Santa Clara, Calif. 95051.

Training software

Advanced Systems, Inc. has introduced Displaywrite III, Course 6265, a program for understanding Displaywrite III word processing.

The first of four Course 6266 video modules defines word processing

and guides students through the cre-ation of a document. The second mod-ule addresses revision functions as well as text formatting.

The final two modules teach the use of tables, math footnotes, spell-

ing checking, repetitive documents, merge printing and special Display-write III feutures.

The program runs on IBM Persona Computers or compatibles.

The Displaywrite III course rents for \$50 a month to \$150 a month per

Advanced Systems, 155 E. Algonquin Road, Arlington Heights, Ill.

Martin Marietta Data System red PC/Ramlearn Basic Reporting, a training package for its Ramis II fourth-generation language

and data base management system. PC/Ramlearn includes courses on understanding the reporting environ-ment, methods of data selection, displaying totals and subtotals and the basic Ramis II report request.
PC/Ramlearn runs on IBM PC-DOS

or Microsoft Corp. MS-DOS Version 20 or higher It runs on IBM Personal C

or compatibles with 192K bytes of memory with a color display and color graphics adapter.

PC/Ramlearn Basic Reporting costs \$5,000 for duplication of up to 25 copies and \$15,000 for up to 100

Martin Marietta, P.O. Box 2392, Princeton, N.J. 08540.

Services

The Society of Manufacturing Engineers and the Industrial Tech-nology Institute have announced the publication of a directory of vendor products said to conform to Manufac turing Automation Protocol (MAP) and Technical and Office Protocol

(TOP) specifications. Products listed in the directory are categorized by end systems, intermediate systems, original equipment manufacturer products, gateways,

network products and network ser Each listing includes such information as a vendor contact, the protocols implemented and the intended operating environment

Subse ptions cost \$135 An on-line data base is also avail-

Society of Manufacturing Engi-cers, P.O. Box 930, One SME Drive, Dearborn, Mich. 48121.

NEW PRODUCTS/MICROCOMPLITERS

MICROS

Systems

Tandy Corp. has added e Tandy 102 portable conter to its line of person

computers.

The Tandy 102 features a full-size 56-key typewriter-style keyboard with eight function keys. d keys and four ornor control keys.
Other features include a

incl five built-in read-only memory software programs for text

iting, address and tele-one filing, appointment re-rd keeping, telecommuni-

programming.
The Tandy 102 is priced at Tandy, 1800 One Tandy

40-char. by 8-line LCD dis-play, 24K bytes of random-access memory and internal 319-in. red 300 bit/sec. direct-connect # tor with i

Comark Corp. has intro-duced the Expert-AT work station, an IBM Personal AT

ter system. ert-AT has eight ex n slots, 640K bytes of

Software applications packages - feet a 19-in. red-green-blue m tor with 16 colors, 640-350-pixel medium-resolu rs. 640- br Computer

ay and full travel m keyboard with

ce Analysis Too E. a personal co The unit also provides til nd swivel control The Expert-AT on is priced at \$6,495. Comark, P.O. Box 474, 93 lest St., Medfield, Mass.

Users direct Performance Analysis Tool Box to de-scribe the hardware, soft-ware, communications and work load characteristics of the system to be modeled. Performance Analysis Tool Box usees analytical queueing network algorithms and ap-proximation techniques to solve the system model. Re-ports including work load throughput and response time may be obtained through the Performance through the December of the con-traction of the con-trac work load characteristics of

AUGUST 4, 1986

Tech

Analysis Tool Box.

Performance Analysis
Tool Box costs \$10,000.

Computer Technology Associates, Suite 600 W., 7827
Jones Branch Drive, McLean, Va. 22102.



Diagonal Data Corp. has introduced Maintlog, a soft-ware module that interfaces the vendor's Micro Maint the vendor's Micro Maint plant maintenance software package with Centec Corp.'s personal computer-based, computer-sided manufacturing management (CAMM).

The Maintlog interface is said to allow Micro Maint to process CAMM-developed

said to allow Micro Maint to process CAMM-developed equipment log files to deter-mine the need for specific maintenance to be performed on the equipment being logged. When a condition re-quiring maintenance is de-tected by the CAMM system, Micro Maint then generates

macro Maint then generates an appropriate work order. The Maintlog interface module costs \$550. Diagonal Data, 2000 E. Edgewood Drive, Lakeland, Fla. 33803.

Software utilities

Popular Programs, Inc. has released Pop-Up PC-13C Calculator, a random-access memory-resident calcu Pop-Up PC-12C Calc is said to emulate He Packard Co.'s 12C calc

The calculator is a des program for IBM Pe program for loss Person Computers and compatible The Pop-Up PC-12C calc lator is priced at \$69.95. Popular Programs, Su 180, 135 Lake St., Kirklar Wash. 98033.



THE IBM S/3 For more information





sure problems associated

ecause Arbiter is a VI pplication, there are le nformation, saving proc-





NEW PRODUCTS/MICROCOMPUTERS

Software enhancements

Bay Computer Corp. has an-nunced its PC/Andit Version 3.5 rd for password protection stomatic logoff of IBM Pers on and sters tied to a mai

ecording to the vendor, if the PC/ According to the ventor, it the Po-Audit senses no activity on the key-board of a PC after a certain period of time, the card will automatically break the link with the mainframe. Additionally, the PC/Audit will pro-tide the action measurements with a di-

Additionally, the PC/Addit will provide the system manager with a detailed audit of all computer usage, including files accessed.

The PC/Audit card costs \$239.

Bay Computer, York & Haverhill Sta., Andover, Mass. 01810.

Microhelp, Inc. has announced his 'n Pokes Version 3.1 and the ide Track Version 3.1 software grams for IBM Personal Comput-

rs and compatibles. Peeks 'n Pokes Version 3.1 inreeks it rokes version 3.1 in-ides such functions as reading and anging the system configuration, itermining the total space and un-red space on a disk and accessing

Inside Track Version 3.1 includes such functions as how to display data faster, how to control the keyboard and how to copy memory from Peeks 'n Pokes Version 3.1 costs \$45, and the Inside Track Version 3.1

Microbelp, 2229 Carlyle Drive, Marietta, Ga. 30062.

Communications

Emulex Corp., has announced DCP/MUX, a communications co-processor board that expands the multiuser capability of IBM Personal Computer ATs, RT Personal Comput-

The DCP/MUX works by incorpo-rating an on-board Intel Corp. 80286 microprocessor that allows the board to off-load processor-demanding terminal com

Features of the DCP/MUX inch an on-board interval timer that sup-ports three 16-bit counters and a con-figurable 16- to 64K-byte shared

Iligurable 16- to 64K-byte shared memory window. The four-line 128K-byte DCP/ MUX costs \$1,250; the eight-line 128K-byte DCP/MUX costs \$1,495, the vendor said. Emulex, P.O. Box 6725, 3545 Har-

bor Blvd., Costa Mesa, Calif. 92626.

Lattice, Inc. has announced Side-talk, a package of telecommunica-tions programming language. Sidetalk includes telecommunica-

Stocials includes the communications programs to retrieve electronic mall, schedule automatic data transfers and set up a bulletin board system. A multitasking operation allows users' telecommunications to be managed while the computer permanaged rms other tasks. The Sidetalk Co

Language, similar to Basic, used to modify or create cust age, similar to Basic, can be

communications processes.
Sidetalk requires Microsoft C
MS-DOS or IBM PC-DOS 2.0 or hig soft Corp. and one serial port. It costs \$119.96. Lattice, P.O. Box 3072, Glen Ellyn. Data storage

Torus Systems, Inc. has an-

According to the vendor, Cacher onitors all hard-disk activity and automatically caches all data trans-ferred to or from the disk in up to 8M bytes of cache memory.

The program is compatib the IBM Personal Computer XT and Cacher costs \$99

Torus Systems, Suite 105, 495 Sea-port Court, Redwood, Calif. 94063. J & M Systems, Ltd. has an-sunced its 10M-byte hard drive kit for the Tandy Corp. 1000 system. The user-installable kit consists of

a 10M-byte Winchester drive, con-troller, cables, mounting hardware and installation manual. All compo-

the drive being mounte ond floppy drive positio ented in the sec-

ond noppy serve possion.
The system requires IBM PC-DOS
2.1 or higher.
The hard drive kit for the Tandy
1000 costs \$495.
J. & M. Systems, 15100-A Central S.E., Albuquerque, N.M. 87123.

Printers/Plotters/Peripherals Summagraphics Corp. has intro-duced the Professional series, a graphics tablet featuring a full 18-in.

by 12-in. active area. 1,000 line/in. resolution and features an interface cable, power supply and documentation. It utilizes the capa-

bilities of graphic software packages such as Autodesk, Inc.'s Autocad and The Professio

be used with the IBM Personal Computer and compatibles and Apple omputer, Inc. Macintosh computers.
Professional series packages cost

Summagraphics, 777 State St. Ex-tension, Fairfield, Conn. 06430.

COMMUNICATIONS

Controllers

Renex Corp. has announced its RTD unit asynchronous comm

tions controller, said to support dual RTD permits communication be med on page 72

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NEW PRODUCTS/COMMUNICATIONS

tures include the ability to support seven colo auto bit/sec. rate detect

nex, 1513 Davis Ford Woodbridge, Va.

Software

lac's

vided by the host operating 60/Apollo is said to een the Apollo Version 9 d the Tektronix 8540 and 8540A integration units, per-

Apollo-hosted compilers and nbiers, a user can perform high-level and low-level debugging from his workstation using the features pro-

The ICom40/Apollo package costs \$2,000 Tektronix PO 14752, Portland, Ore. 97214.

Multiplexers/Modems Alge, Inc. has announced its Alge MC610 statistical

Aigo MC610 is said to be a statistical multiplexer, a re-source sharing switch and a sta concentrator capable of ng up to 500 local or ste asynchronous user

The MC810's switching features make it possible for any RS-232 device to dynamically connect to any other local or remote RS-232 de-vice. The MC610 with six ports in single quantity costs \$1.495.

Algo, 9198C Red Branch Road Columbia, Md. 21045.

Lastel Corp. has intr-uced its Series 900 modes icluding the 192CEU, 900/ 9008, 9007 and 900DC broadband products for net-works using 192.25 MHz as a translation frequency. The 192CRU central re-

transmission unit is a single-channel frequency translator available for five video channels from 83.75 MHz to 113.75 MHz It costs \$1,490. The 900T and 900DC analog voice modems can interface two single-line telephones or connect a single-line phone to a private branch exchange. Each costs \$880. The 900A data modem of

fers asynchronous communi-cations at 9.6K bit/sec. The 900S can operate either as an asynchronous or synchronous unit and offers opera-tion from zero to 19.2K bit/ sec. The 900A costs \$780. and the 900S costs \$980. Lantel, 3100 Northwood Place, Norcross, Ga. 30071.

Hewiett-Packard Co. has announced its Digital Multi-plexed Interface (DMI) link

product.
The HP DMI allows the HP
3000 to connect 23 RS-232C
ports, at rates up to 19.2K
bit/sec., to the private
branch exchange network
via a single TI interface running on small-diameter telewhose seble

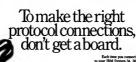
one cable. According to the vendor, the HP DMI eliminates the need for individual RS-232C nnections by using data idules between the HP 00 and the PBX.

The product costs \$9,300.

HP, Inquiries Manager,
1820 Embarcadero Road,
Palo Alto, Calif. 94303.

Network services Vestern Union Corp. has ied the TRW Business dit on-line data base to

ess to credit in ad key business



Each time you connect a PC or periphers to your IBM System 34, 36 or 38, you face a diemma. If you buy a board level protocol con-vertor, you have to install it yourself — and use up a slot doing it. If you buy a multiport convertor, you might be paying for ports you

That's why we're pleased to announce our e-port, portable Series III TWINAX protoco werter. Compact and affordable, it's perfect on applications that require s

ple local port.

Best of all, the Series III con commo as, use Series III converter doesn't require technical expertise. Simply plug it is and it's ready to go. And it can be moved easily from denice to denice as your needs dictate. The Series III TWINAX converter provides IBM System SX connections for most devices, levelate and

vices, including printers, CRTs and micro-imputers (such as IBM, Wang and Macintosh) It can be used with a low cost modern to give a remote device access to the 3X as well. And like our Series II multiport TWINAX converter, it corporates these levels of internal diamostics

your single port protocol connections without petting a board. Call us day at 1-800/531-5167 (in Texas, 512/836-8080) or write



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NEW PRODUCTS/COMMUNICATIONS

formance and stability of current and tential customers or suppliers. The TRW Business Profile reports are

continually updated.
Each TRW Business Profile is available for \$33, including a \$25 surcharge and the standard \$8 infomaster service search fee.

Western Union, One Lake St., Upper Saddie River, N.J. 07458.

Health Forum, a collection of infor mation systems and services for the

health care industry.

National Health Forum provides ationwide computerized information on hospital cost, quality of care, financial performance, population demographics and health services

The National Health Forum system incorporates an electronic con-ferencing utility that allows scattered participants to share and evaluate critical organizational ana-

The National Health Forum sys-tem costs \$12,000 plus remote com-

puter service charges.

Network Technologies Interna-tional, Suite 280, 315 W. Huron St., Ann Arbor, Mich. 48103.

Test equipment Tekelec has announced the Quasi Random Signal Source (QRSS) op-tion for its TE820A T1/DSI test sys-

tem.

The QESS option is a plug-in card
said to enable testing of data and
voice equipment to ensure the integrity of the TESEOA test system.

The QESS option transmits known

The QRSS option transmits known patterns through the DSI equipment and compares the received pattern to the original. If errors have been introduced into the original pattern, the TES2OA will supply a bit-error count that can be displayed as either error rate, individual errors or errors of errors or errors of errors or errors of errors.

The QRSS option costs \$1,500.
Tekelec, 26540 Agoura Road, Calabasas, Calif. 91302.

eties, Inc. has introduced the

System. The Sensaphone Computer Monitoring system sounds an alter II there are a sensitive to the sensitive sensitiv

Phonetics, 101 State Road, Media, Pa. 19063.

Auxiliary equipment

Electro Standards Laboratory, Inc. has introduced its Model 8874-D IEEE 488 ABCD Switch for switching devices having IEEE 488 inter-

The Model 8874-D is said to al the user to switch a device having an IEEE 488 interface to any one of four IEEE 488 ports or switch any one of

our devices into one port. All 24 leads of the interface are transferred simultaneously by operating the front panel selector switch. All cable nnections are made at the rear pan-

The Model 8874-D costs \$220. Electro Standards Laboratory, D. Box 9144, Providence, R.I. has introduced the

Multi-Log X.25 monitoring device.

The Multi-Log X.25 is said to moni-

tor packet-level data frames and pro-duce statistics on calls made and data

transferred during these calls. Out-

put statistics such as calling address,

charges, date, time and duration are

incoming/outcoming call.

given, according to the vendor. Multi-Log X 25 can handle a maximum of 20 calls. Multi-Log X.25 statistics are produced in one of two opal formats and are output from an RS-232 port for connection to a computer system or printer.

Multi-Log X.25 is priced at \$2,995. Dynapac, 6464 General Green Way, Alexandria, Va. 22312.

Electronic Specialists, Inc. has introduced the Model PDS-11/Sup

Kleen Line modem protection. Kleen Line security systems are said to suppress damaging telephone and power line spikes caused by lightning, apherics or phone office

switch gear.
Model PDS-11/Sup has suppression on red and green phone lin

with yellow and black lines brought straight through, A 6500A suppres-sor protects the AC power line. Kleen Line Models are available for standard RJ-11 and RJ-45 modu-The Model PDS-11/Sup costs \$109.05.

Electronic Specialists, 171 S. Main St., Natick, Mass. 01760

Mod-Tap System has introduced its Modular IBM Adapters. The Modular IBM Adapters are

said to allow the user to convert the IBM Cabling System to standard twisted-pair wiring through modular connectors. The Modular Adapters

are available with either a modular jack or a modular plug.



Design refinements cut size, cost and power consumption for 4800 bps modems

Universal Data Systems

NEW PRODUCTS/SYSTEMS & PERIPHERALS

Continued from page 73

The adapters can be ordered in 4-, 6-, 8- and 8-wire keyed polarization. The adapters can be used in IBM To-ken-Ring applications with the IBM 8228 Multistation Access Units, accepting the page 1

cording to the vendor.
The Modular IBM Adapters cost \$28.28.

Mod-Tap System, P.O. Box 706, Ayer Road, Harvard, Mass. 01451.

& PERIPHERALS

Turnkey systems

Lattice Logic U.S.A. has anred its App

The Application Specific Engine insists of a 32-bit computer that ins the vendor's Chipsmith silicon as the vendor's Chipsmith silicon npiler software, a large 1,280- by o-pixel monocurome monitor that splays design data through the Dig-d Research, Inc. Graphics Environ-int Management windowing sys-n; 3M bytes of real memory, 16M

bytes of virtual m che Application Specific Engine workstation is priced from \$15,995 for an entry-level workstation. A complete system costs \$24,995. Lattice Logic U.S.A., Suite 199, 3333 Bowers Ave., Santa Clara, Calif. 95054.

CAD/CAM/CAE

Daisy Systems Corp. has en-hanced its Physical Modeling Exten-sion (PMX) with PMX Fastboard. The PMX system is said to allow signers to simulate systems that use advanced components, such as Intel Corp.'s 80386 32-bit micro-

Intel Corp.'s 80386 32-bit micro-processor, at speeds of up to 25 MHz. The PMX Fastboard allows users to incorporate the actual micro-processors and other very large-scale integrated components when simu-lating board—and system-level de-

signs, according to the vendor.

The Fastboard is said to support variable vector playback rates from 200 KHz up to 25 MHz in increments

of 20 ns It features a 64K-byte vector depth for each of 94 logic signal

PMX Fastboard costs \$15,000. Daisy Systems, 700 Middlefield Road, Mountain View, Calif. 94039.

Data storage

Ciprico, Inc. has introduced the Rimfire 2000 enhanced storage mod-ule drive disk and small computer

ule drive disk and small computer systems interface controller and the Tapemaster 2000 14-in. tape control-ler for Multibus II systems. The Rimfire 2000 features a 128K-byte and 512K-byte on-board sector cache, a defect management system that includes track and sector map-ping and compatibility with 24-MRs disk drives and a 48-bit error correction code.

The Tapemaster 2000 reportedly features a dual-ranked first-in, first-out in the data path, allowing data transfer rates of up to 1.8M bit/sec., scatter read and gather write com-

mands.

Rimfire 2000 costs \$3,496, and Tapemaster 2000 costs \$2,795, according to the vendor.

Ciprico, 2965 Xenium Lane, Plymouth, Minn. 86441.

and SS/80 computers. The Model 5840-RM Twinpac fea-

Zetaes, Inc. has announced Model ARZ-1, a disk controller said to emu-late Data General Corp.'s Argus/ 6236, and Model LRS-10, a DG-com-

Model ARZ-1 supports data transfer rates of up to 3M bit/sec. It infer rates of up to 3M bit/sec. It in-cludes a 1G-byte optical disk drive, as 100M-byte magnetic disk drive, an Argus-emulating peripheral control-ler and controller-to-drive cabling. Model AEZ-1 is priced at \$4,295.

Model LRS-10 costs from \$20,000 to \$30,000.

Zetaco, 6850 Shady Oak Road, Eden Prairie, Minn. 55344.

Bering Industries, Inc. has an-ounced its Model 5840-RM Twinpac dual Bernoulli disk drive subsy for the Hewlett-Packard Co. CS/80

tures two 8-in., 20M-byte removable Bernoulli cartridges and can be used as primary storage and as a backup as primary storage and as a backup system. According to the vendor, the average read/write transfer rate of the drive is 656,764K btt/sec., and the average seek time is 40 msec. The Model 5840-RM Twinpac costs 45,890 and the Model 5820-RM Uni-pac costs 44,890. Bering Industries, 1400 Pulton

Bering Industries, 1400 Place, Fremont, Calif. 94539.

Terminals

Gould, Inc. has introduced the IP9000 Series Image Processor. The IP9000 series is said to pro-cess 2,048- by 2,048-pixel by 32-bit true color images with a 1,280- by 1,024-pixel, 60Hz flicker-free image

display. The IP9000 arbitrated bus structure permits multiple functions to run concurrently, allowing a user to perform a Past Fourier Transform while simultaneously acquiring, pro-cessing and displaying an image. The IP9000 series is available in

Model 9516, a one-user system, and Model 9527, a two-user system. The IP9616 costs \$74,000, and the IP9627 costs \$120,000. Gould, 46360 Fremont Blvd., Freent, Calif. 94538

Printers/Plotters

Western Graphtec, Inc. has intro-duced the GP 9011 E-size pinch roller plotter

The GP 9011 is a four-pen pinch roller plotter capable of handling sizes from 8%- by 11-in, to architectural engineering sizes. The unit fea-

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NEW PRODUCTS/SYSTEMS & PERIPHERALS

that automatically lines up the X and Y axes with the paper. A 20-char. by 2-line LCD display enables program debugging and simple interactive op-

eration of various manual functions. The GP 9011 costs \$8,950. Western Graphtec, 12 Chrysler St.,

phtec, Inc. has introced its MP2300 eight pen flatbed

plotter.

The MP2300 has a plotting speed of 10 in./sec. in the drawing mode and 16 in./sec. when the pen is raised. Other features of the MP2300 include an automatic pen capping system, automatic pen selection, a dual-voltage switch and an electrostatic paper-hold-down system.

The MP2300 is priced at \$1,250. Western Graphtec, 12 Chrysler St., rine Calif 92718

nix, Inc. has introduced its L300 bar code printer. The L300 is said to be capable of oducing all major bar codes. According to the vendor, a variety of forms may be used, including card stock, adhesive-back forms for labels and six-part forms for reports, in

voices and sales orders. Features in-clude a dark plot mode for increased ribbon life and a quick-access cover ontion that enables users to res labels without opening the cover The L300 is priced at \$5,400.
Printronix, P.G.-Box 19559, 17500
Cartwright Road, Irvine, Calif. **Auxillary equipment**

Digital Controls Corp. has an-unced its Model 9000 small comer system interface (SCSI) switch. According to the vendor, Model 9000 allows reconfiguration of peripheral controllers between m sor systems that use the SCSI host adapter interface. It allows switching and reconfiguration for backup or job-related changes, ac-

Model 9000 is priced at \$1,350. Digital Controls, 3496 Newmark Drive, Miamisburg, Ohio 45342

Perfectdata Corp. has announce Perfect-Vu, a line of screen filters for o display units. The filter line features an acrylic

polymethyl methacrylate said to of-fer light-absorbing and light-diffus-ing characteristics. The screens reduce glare by 96% and enhance contrast between the data displayed and the background

Perfect-Vu is available in eight sizes. Pricing is \$34.95 each. Perfectdata, 9174 Deering Ave. Chatsworth, Calif. 91311.

Decitek Test Systems, Inc. has in-troduced the CT-300 portable inter-

The CT-300 is said to provide diagnostic capability to test and exercise est terminals and printer devices. CT-300 was designed for applications such as incoming inspection, quality assurance, field service, manufacturing final test, marketing demonstraons and in-house maintenance.

The CT-300 incorporates two seri-al ports, one parallel port and a data line monitor. The front panel load port accepts both crasable, program mable, read-only memory-based car tridges and battery-backed random access memory cartridges

The CT-300 is priced at \$1,995. Decitek Test Systems, 25 South St. Hopkinton, Mass. 01748.

PRICE REDUCTIONS

ame has a red price reductions for its Machartie and MacCharlie Plus. MacCharlie and MacCharlie Plus

both provide a fast interface between IBM Personal Computers and Apple Computer, Inc.'s Macintosh programs and files. Both programs include 256K bytes of random-access memory and one disk drive, according to the vendor.

Both MacCharlie and MacCharlie Plus now cost \$795. Dayna Communications, Suite 530,

50 S. Main St., Salt Lake City, Utah 84144

Bering Industries, Inc. has a nounced price reductions on its Se ries 8000-EP enhanced performance rice reductions on its Seives for Hewlett-Packard Co.'s CS/

80 and SS/80 computers.
The EP line features faster transfer rates and seek times than those of Bering's standard Series 8000 line as well as a faster disk controller.

The 8065-EP 65M-byte hard disk now costs \$4,650, the 8095-EP 95Mbyte disk now costs \$5,450, the 80135-EP 135M-byte hard disk now costs \$8,150 and the 80190-EP 190Mbyte hard disk has been reduced to 19 150

Bering Industries, 1400 Fulton Place, Fremont, Calif. 94539.

Bewiett-Packard Co. has reduced he price of its Enhanced Portable Plus portable computer and the ex-tended memory drawer and memory

d Portable Plus con The Enhanced Portable Plus com-puter with 512K bytes of random-ac-cess memory, featuring a high-con-trast LCD display, has been reduced from \$3,395 to \$2,995.

The extended memory drawer has sen reduced from \$495 to \$395. The memory card, previously priced at \$350, has been reduced to \$250. HP, Inquiries Manager, 1000 N.E. Circle Blvd., Corvailis, Ore. 97330.

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ched the Fortune 500

COMPUTER INDUSTRY

Teknowledge retools expert systems for business market

Despite profits, analysts doubt MIS acceptance

Moura McEnancy PALO ALTO, Calif. — By the time Teknowledge, Inc. had launched its initial public offering last March, the company had earned its stripes in the artificial intelligence software and

After five years in miness, the developer of expert sys-tem shells could client list. Heavies like General Motors Corp., Procter & ble Co. and FMC not only had

ge service coneach ed a 10% inte in the company.
In addition to its noteworthy client list, Teknowledge in 1984 was one of the first Al-related firms

to bring a product to Teknowledge's Despite achievements however analysts say rakening as it attempts to bring its oducts and services out of the tech-cal sphere and into mainstream

ough sales of its M.1 and S.1 expert system tool kits account for less than 25% of the company's reve-nue today, Teknowledge further dis-tinguishes itself as being one of the

few profitable Al-related firms. For the year ended June 30, Teknowledge expects to turn a is small but nonether less significant profit less significant profit of \$710,000, or 13 cents a share, com-pared with fiscal 1985 losses of \$1.16

> is also a former em-ployee of Teknow-ledge, the biggest is-sue for Teknowledge and other Al firms is

The market that is evolving is not the end-user market," Stach says. "MIS managers today are getting bombarded with all types of tech with all types of technology and are not easily convinced of the benefit of

easier to sell them soft-ware that cleans Cobol code." Expert systems may not make it into MIS ope for another three to

seven years, she adds. Founded in 1981 by a group of 20 scientists, including current Vice-Presi-dent Frederick Hayes-Roth, Teknowledge was launched as a training and services organization for companies interested in

developing in-house ex-pert systems. In 1984, Teknowledge introduced its S.I tool kit for LISP workstations and the M.1 tool kit, written in Prolog for devel-

tems on micros.

Because of the limited installa-tions of LISP-based machines, Tek-nowledge late last year announced language to allow the product to run on Unix-based systems and Digital Equipment Corp.'s VAX machines

running VMS. Teknowledge Chairman, President and Chief Executive Officer Lee Hecht says that under the C Ianguage, the M.1 and S.1 packages can be used to solve more general busims, an area the con is anxious to enter and one that of

AT A GLANCE **TEKNOWLEDGE**

nded: 1981 man and CEO: Lee Hecht ny products: Expert syl. 'em shells Imeted 1986 revenue: \$14.6 million tal year ended June 301 ed 1886 profits: \$710,000

tiel public offering: Merch 1986

Mayess: 180

fers the most revenue potential.

Advertising, marketing and field services expenses associated with that strategy change contributed to an anticipated \$270,000 fourth-quar-ter loss, the company said last week.

some expected orders for the shortfall but expects its revenue to show 48% growth to \$4.3 million in the quarter.

Although Hecht says Teknowledge's shift into the mainstream
computer market and its continued
emphasis on its high-margin services
is necessary, others say the company
is confused.

mman as wer as industry tends.

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the company could be in for a rude expert systems. It would be much

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ohn P. Bertich is President of Bertich & Company Advertising, Inc., a full service recruitment advertising agency headquarteed in New York, with otices in Boston, MA and tyrine, CA. John is often asked by his clients to recruit data processing professionals and where to run their data.

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COMPUTER INDUSTRY

Teknowledge retools systems

"They change their product strat-egy every quarter," says Harvey egy every quarter, says marvey Newquist, analyst with DM Data, Inc. in Scottsdale, Ariz. "They started out an an education and contract compa-ny, then with S.1 shifted to become a d-level tool company and later with M.I tried to get into the low

with M.1 tried to get 1100 cm.
end." Newquist says.
Porting the products over to the C
language allows Teknowledge to address a part of the market the company
was losing, but it is also a portion
of the market that has not yet
grasped the benefits of expert systidae is also lazering betidae is also lazering begrasped the benefits of expert sys-tems. Teknowledge is also lagging be-hind AI competitors like Inference Corp. and Intellicorp, both of which have succeeded with niche penducta for factory automation and govern-

ent applications, Newquist says. Al companies that will survive ist have products consistent with today's operating environments, pro-vide a lot of support and have strong management and execution, according to Dataquest's Stach. She says cents per share, compared with \$2.2 eknowledge has a chance, provided ms are not overlooked.

The thing to watch is how well the management controls their products," Stach says. "Teknowledge has to decide what business it is in - service or software. It needs to figure out which is the cart and which is the

a-Bass, Inc. reported revenue for the quarter ended June 30 of \$22.7 million, compared with \$18.7 million in the comparable period one year ago. The company repo ed a net loss for the quarter of \$3.9 m, or 23 cents per share, com pared with a net income of \$1.3 mil-lion, or 8 cents per share, in the same

quarter last year Mohawk Data Sciences Corp. reported net income for the fourth quarter of \$1.5 million, or 10 cents per share, on revenue of \$48.9 mi lion. This compares with a net loss of \$120 million, or \$8.20 per share, on

revenue of \$78.7 million reported in the like quarter a year ago. Wyse Techno ue Technology, Inc. reported ue for the first quarter ended June 30 of \$52.6 million, an increase of 43% over the \$36.9 million reported in the like quarter of the previous year. Profits were \$4 million, or 34

million, or 24 cents per share, a year Paradyne Corp. announced reve nue for the second quarter ended June 30 of \$67.1 million, compared with \$66 million one year ago. Net income was \$495,000, or 2 cents per share, compared with a net loss of

\$9.2 million, or 41 cents per share, in the like quarter a year ago. ~

Fortune Systems Corp. an-ounced net income of \$253,000, or 1 cent per share, on revenue of \$9.7 million for the second quarter ended June 30. This compares with net in-come of \$222,000, or I cent per share, on revenue of \$14.6 million in the

comparable period last year. Quantum Corp. reported revenue for the first quarter ended June 29 of \$25.3 million, compared with \$34 million in the previous year. Profits were \$2.5 million, or 25 cents per share, compared with \$5.7 million, or

60 cents per share, in the like quarter

ton Lee, Inc. announced reve nue for the second quarter ended June 30 of \$7.4 million, compared with \$8.1 million in the previous year. Net loss for the second quarter was \$262,000, or 3 cents per sha compared with net income of \$1.1 million, or 14 cents per share, reported in the second quarter in the prior

Integrated Software System reported net income of S166,000, or 3 cents per share, on revenue of \$7.6 million for the sec-ond quarter ended June 30. This compares with net income of \$613,000, or 11 cents per share, on revenue of \$8.7 million reported for the second quar-

ter of fiscal 1985. Duquesne Systems, Inc. an-

nounced revenue for the third quar-ter ended June 30 of \$7.4 million, a 157% increase over \$2.9 million in the like period a year ago. Profits were \$1.5 million, or 30 cents per share, compared with \$564,000, or 13 cents per share, a 159% increase over net income reported in the com-parable period a year ago.

Northern Telecom, Inc. reported net income of \$58 million, or 50 cents per share, on revenue of \$1.1 billion for the second quarter ended June 30. This compares with net income of \$76.4 million, or 66 cents per share, on revenue of \$1.1 billion in the pre-

vious year.

Compugraphic Corp. announced revenue for the second quarter ended June 30 of \$83 million, compared with \$105.1 million in the like per a year ago. The company reported a net ioss of \$1.8 million, or 22 cents per share, compared with a net profit of \$8.4 million, or \$1.01 per share, in

the comparable period one year ago. Xerox Corp. announced income from continuing operations for the ended June 30 of \$135 mills on, or \$1.27 per share, compared with \$120 million, or \$1.12 per share, in the comparable period last Net income in the second quarter,

Including a discontinued operations charge of \$12 million, was \$122 million, or \$1.13 per share, compared with \$220 million, or \$2.17 per share (including a \$95 million gain from discontinued operations), a year ago.

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COMPUTER INDUSTRY TI upswing continues in second quarter

Sales, income increase; continued growth seen

By James A. Martin
DALLAS — Texas Instruments,
inc. last week reported its third consecutive quarter of improvement in
operating performance.

The company's second-quarter net come was \$12.3 million, or 35 cents

income was \$12.3 million, or 35 cents per share, compared with a loss of \$3.9 million, or 16 cents per share, in the same quarter of 1965. Not sales billed for the three months ended June 30 were \$1.24 bil-

Although no specific figures were given, the company said its data sys-tems division was profitable in both the second quarter and the first six months of the year, compared with varance free losses.

year-earlier losses. The semiconduct The semiconductor division's per-formance improved for the quarter, operating slightly below break-even. For the six months, however, the di-

crease in co

Although TI should experience overall sales and income growth for the remainder of the year, semicon-ductor losses should continue in the

Sales in the data systems division

ld remain static, unless there is ne improvement in the economy.

some improvement in the economy. "Their costs are now under control, but I don't see much happening in revenue there." Barlage said.

Data systems has been lagging behind competitors in sales of its micro-administration of the second control of the second control

ed income growth by next year, he

"Just name a company, and we probably heard from them ...thanks to our ad in Computerworld."



All don't walk to IBM's beat

From page 102

All of those or reported second-quarter earning gains ranging from solid to spects lar. These are hardly niche comp nies but broad-based, established firms that are selling plenty of com-puter hardware and software. Not to tion the computer services mar-

mention the computer services mar-ket, which appears as strong as ever. Is this really an industry slump? Granted, the high-end, general-purpose mainframe systems business is down. Companies with most of their eggs in that basket — like Am-dahl Corp. — exemplify this down-ward trend, while vendors diversify.

ing away from that market — like NCR — are seeing rewards. Slower U.S. capital spending is a reality, and no computer industry segment feels that pinch more than

large systems that require a multi-million dollar investment decision. But what of all the spending for DEC minis, MSA applications, Com-pag clones and Tandem transaction paq clones and Tandem transaction processors? Although information systems spending will fall below ear-lier projections for the year, there are clearly plenty of MIS dollars out there for vendors with the right products and the right approach. One year ago, the slump was an

across-the-board reality. Now, many vendors have recovered not by wait ing for the economy to improve but by making the right technological and business decisions. For others the industry slump is an excuse on which to blame a host of product and/or marketing disappoints

Stuck in the mod

While IBM's wees in some cases typify the difficulties of certain in-dustry segments, it does not make sense to simply look at IBM's falling profits and conclude that the entire industry is still stuck in the mud. Due partially to its mind-boggling size, IBM has many unique problems—such as the mid-range confusion born of IBM's different architecture

born of IBM's different architecture for different markets. While Wall Street might still be-lieve the maxim that when IBM sneezes (actually, wheezes may be more accurate), the industry catches a cold, a clearer look at the industry a cold, a clearer look at the industry half way through 1986 proves other-wise. IBM and many other vendors are ailing, but plenty more are healthy, and some even look ready to run a triathlon. Armonk is not the only place to read an ind weathervane.

It's not nice to fool Wall Street It's not nice to fool Wall Street.

Daisy Systems Corp. learned this earlier in the year when it admitted that its predicted roop scenario would not materialize. The latest victim of such an "copps" was Ploating Phier Southern. Inc. 19

Point Systems, Inc.
Ploating Point recently announce
that revenue for the quarter ended
July 31 will fall below year-earlier levels, while profits will reach 50% of last year's, at best. The firm's stock promptly lost almost half its value in a New York Stock Exchange eli-off, and last week, two separa lass-action lawsuits on behalf of ers were filed against the



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Action lifts CDC division

ing a comm ng a commodities market, he says. Competition from Japa-sese and U.S. West Coast cally, saturating the market with peripherals, which led to large price reductions. But external reasons can-

CDC's problems. The peri-pherals division was in the classic market leadership po-sition, primarily built on its

minant position in the re-ovable drive portion of the dustry, Perhans says. As that technology shifted tickly to fixed drives, the vision could not move rugh to catch up.

agh guilt to go around, film head technology to be-

d for ferrite or con

e heads, causing too much ventory and capacity. The return to profitability suited from Periman's deci sion to concentrate on the high-performance, high-ca-pacity drive OEM market,

which he says was the firm's ggest strength. He slashed the work force from approximately 19,000 to 10,000 people. He elimid eight of 15 p

of the group's businesses, such as its magnetic media unit to Xidex Corp. and its IBM plug-compatible Series/ minicomputer peripherals usiness to Cambex Corp. The Data Storage Products froup was decentralized in June to include four autono large-disk, small-disk and op-tical/tape. The optical store business is a joint ven-re with N. V. Philips. "I don't want to tell vo

that morale was wonderful through all this," Perlman says. "But I think people now feel that they have been a part of the turnaround, and for people that have been through that, it's pretty heady stuff."

You have to give Periman much of the credit for the turnaround," Blauer says. "He is what that business needed — a strong, action-oriented guy who gets things fixed."

Periman is clear about his plans for the group's future.
"We have to continue the improvement in gross mar-gins," he says. "I believe that we have to take from 20% to 25% out of our product cost each year for the next two to remain competi

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Lawmaker delays effort

From page 102

need for the legislation be-cause the industry was able to self-regulate," ADAPSO

to self-regulate," ADAPSO attorney Joe Rubbe said. In April, ADAPSO pro-duced a set of warranty guidelines that the group hopes its members will opt. Among the firms to opt the guidelines is Lotus velopment Corp.

Industry representatives say they understand the campaign for stronger war-ranties has not ended with this legislative session.
"Assemblywoman Molin coluntarily withdrew the bill from consideration, but she remains the judge and jury," ADAPSO's Ruble said. "The

warranty issue is a continu-ing campaign on our part."

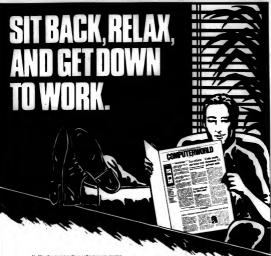
Others in the industry say they prefer legislative action on warranties because soft-ware is not classified in the Uniform Commercial Conwarranty issue is a com Uniform Commercial Code

covering warranties.
"I believe legislative clarification of our situation might be constructive," not-ed Marty Rinehart, chairman of the Software Publisher Association's warranty com

mission.

According to Rinehart, chairman of Wallsoft Systems, a software company in New York City, Molina's bill New York City, Molina's bill was faulty in that it did not take different kinds of software into account. For example, companies producing game software have a completely different set of responsibilities than data base software firms, he said.

Legislation similar to the Molina bill was also drafted but never filed in New York te this year



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Then we'll zero in on systems integration.

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U.S., Japan resolve year-long semiconductor trade dispute

Japan agrees to promote sales of U.S.-made chins

WASHINGTON, D.C. - The U.S. nd Japanese governments last week anounced the settlement of their ar-long semiconductor trade distc. The settlement requires the panese government to monitor the its and prices of Japanese-made niconductors and take several

eps toward promoting the sale of S-made semiconductors in Japan. The settlement suspends the U.S. government's plan to impose puni-tive import duties in two cases of alleged Japanese chip-dumping. Al-though one case involved 64K-byte erasable programmable read-only memory chips and the other arose over 256K-byte dynamic random-ac-cess memory chips, both named most of the same Japanese vendors, in-cluding Fujitsu Ltd., Toshibs Ltd.

and NEC Corp. The settlement stopped short of anteeing U.S. semiconductor uaranteeing U.S. semiconductor endors a specific share of the Japa-ese market, but the U.S. chip indus-

The SIA said it will reactivate its unfair trade charges unless significant market share gains occur in the next five years.

try's trade group said it will reactivate its unfair trade charges unless significant market share gains are de in the next five years

Alan Wolff, an attorney representg the Semiconductor Industry Asriation (SIA), said the U.S. industry expects to capture slightly more than 20% of the Japanese market by than 20% of the Japanese market by 1991, or it will renew its trade com-plaints at the International Trade Commission. He said this abould re-sult in about \$5 billion in increased U.S. sales in Japan, where U.S. ven-dors' current market share is slightly more than 8%.

The SIA nonetheless praised the greement as the first step toward a ew era of cooperation in U.S.-Japan rade relations. "It must be considtrade relations. ered a point of departure rather than ation, but it places us on the right path to achieve a fair, balanced and truly competitive trading envi-ronment," said George Scaline, senior vice-president of Advanced Micro Devices, inc. and public policy chair-

man of the SIA.

Scalise acknowledged that the agreement will raise chip prices for U.S. consumers in the short term, but he said the current prices are unrealistic, predstory and weaken the inistic, predatory and weaken the in-dustry to the long-term detriment of consumers. He said the U.S. semicon-ductor industry has a history of re-ducing prices by about 30% per year. U.S. Trade Representative Clayton Yeutter called the pact "one of the most significant agreements that has ever been negotiated by the Unite States of America." He said the pac

In return for suspension of the chin-dumping cases, U.S. negotiators won the Japanese government's agreement to monitor the costs and

prices of Japanese semiconductors exported to the U.S. The monitoring will be done by Japan's Ministry of International Trade and Industry (MITI), which will require Japanese chip vendors to submit cost and export price data to the agency. Should the monitoring program

uncover a Japanese vendor engaged in chip dumping, the Japanese gov-ernment promised to take legal action against the offender. The two nations plan to draw up a

was reached "at the 11th hour and list of chips to be monitored that will 59th minute." include standard Jananese chips that pose a threat of being sold at less than fair market value in the U.S. or are destined for "third countries. according to a U.S. Department of Commerce statement. The statemen did not define "third countries," but sources say those nations include most of Western Europe. If the Com merce Department comes to believe that any monitored chip is being

dumped in the U.S., it can demand the data the alleged offender supplied to MITI under the program.

To increase U.S. vendors' access to

the Japanese chip market, the settlement also calls on the Japanese gov-

chip vendors and Japanese custom providing U.S. vendors with equal access to Japanese patents resuiting from government-sponsored The agreement also calls upon the

Japanese government to establish an organization to encourage Japanese chip customers to buy from non-Ja anese vendors. The organization will, at the request of potential customers. assess the quality of non-Japanese semiconductors.

anese chips. It also urges promoting long-term relationships and joint

product development between U.S.

CW Correspondent Mitch Betts contributed to this story.

"Computerworld's audience delivers the proven professionals that we look for."



A division of Management Recrutives binemational with 172 offices in the U.S. CompuSearch markets itself as the option's largest recruitment agency derivate est-chartrely to MS(DF) picoments. But it was not always that way, according to Marc Bleesing. Director of CompuSearch. way, according to Marc instead; beautiful of consociations of Computeration headed to goth industry awareness. The years ago the general public and most of the DP industry had never beautiful of Computeration. Prospective clients would other say, who?" when our account estimative would out." says Marc. "He needed national recognition and we needed a publication that would allow us to zero and we needed a publi on our larget audience So Computerarch started advertising in Computerworld

"Il worked because of Computerworks's audience," ht explains, "We're getting people with diverse backgro-— from dedicated professionals with 23 years of programming experience to top MS(2P management Computerworld's audience delivers the proven protestonals that we look for." Marc reports. use of the new contacts that Compa ged on both the client and condido

produces on both the cases and consumed Both, we decided to increase — calcularly double — our deliversials in 1984, "he odds. "We've considered other publications, but we know that our dollars streich lamber with Computerworld. It allows as to hit our target audience."

Computerworld. We're helping employers and top protestionals get together in the computer community Every week. Just ask Marc. For all the tacts, call Al Debtille, National Sales Manag (617) 879-0700. COMPUTERWORLD

"The new machines will help th

Salomoo Brothers analyst M

thest exceeded their sales expecta-tions during the year. "Those are the

stems most targeted at the large mmercial accounts," he said. Many of DEC's sales have come at

increased its fourth-qu

net profit margin to 11% from 5.4%

one year earlier. Steinkrauss attrib-oted the margin to increased manu-

are \$800 million lower than year-ago levels, a greater percentage of higher margin new products in DEC's prod-uct mix and consolidation of facili-

DBC's gross margin of 47.1% dur-ing the quarter was at its highest lev-el in at least 13 years, Schulman said.

vices industry, Steinkrauss said DEC

made strong gains during the year selling to the Bell operating compa-

reasons for the fourth-quarter de-

IBM pricing changes that offer high-er margins to retailers selling IBM mi-

cros fully configured by IBM, rather

than enhanced with memory boards

and other features from independent

ers such as AST Research.

AST earned \$4.1 million, or 35 cents per share, down from \$6.7 mil.

During the quarter, AST laid off 65 employees, or 7% of its work force. For the fiscal year ended June 30,

AST's profits were \$27.2 million, or

\$2.34 per share, up 43% from 1985

levels. Revenue grew 24% to \$172

on, or 61 cents per share, a year ear-

evenue fell 6% to \$40 mil

The latter citation refers to recent

fields such as aerospace.

es and to customers using the VAX

00 for simulation and modeling in

In addition to the financial

og efficiency, inventories that

DEC finishes record year

From page 102

pany's performance resulted from a revamped VAX line with dozens of new offerings, compatible computer architectures, lowered manufacturing costs and an aggressive effort to crack traditional IBM mainframe installations in markets such as bank.

ing and insurance.

"Their products are in piace for the commercial market, and it's just a matter of spending time with those accounts, which they are doing with Dean Witter Reynolds, Inc.
DEC has hired some 6,000 sales

and service employees in the past year, while overall employment in-creased by about 5,000 to 94,700 worldwide, according to DEC spokes-man Mark Steinkrauss. The differential was due to attrition in manufacnkrauss said the Microvax II

has been a key product in DEC's strategy in the commercial market. the customer understands how effective that is in departmental computing, it's a real door-opener for he said Tomorrow, DEC is expected to a

ounce products to fill in its high end mounce products to tail in its aign end and to continue to target the commer-cial and financial marketplace. "All of our surveys indicate that they are improving their position in the banking market," said Rich Mi-kits of market research firm interna-

Compaq up; AST down in micros

do the job of sales and support on the \$1,000 to \$10,000 deals better than any manufacturer's sales force. The earnings and revenue drop of vine, Calif.-based AST Research. which had been expected [CW, July 14], did reflect the market pressures

of low-priced clones. in a prepared statement, AST President Safi Qureshey cited "mar-ket acceptance of PCs other than IBM" and "recent functionality

changes ISM has made in its PC" as

INDUSTRY NOTES

IBM to decentralize in Europe

tralize its operations in Europe in an effort to improve telecomcations sales and increase local au-tonomy. IBM Europe will be divided into two groups, one including West Germany, France and Italy and the other made up of smaller markets.

Control Data Corp. announced it has repaid all of its short-term bank debt in the U.S., paying off the final \$315 million with proceeds from the recent sale of \$350 million in long-term corporate bonds CDC's 27 creditor banks had given the company a deadline of Dec. 31, 1986, to repay the short-term debt.

ings for most of fiscal 1987, ending next April 30, will be below expectations. He cited the cost of recent moves to spur sales, including a 30% increase in Cultinet's worldwide sales force and the firm's entry into the Digital Equipment Corp. VAX

Cullinet Software, Inc. said it may report the first losses in its his-tory for the quarters ended July 31 and Oct. 31. Chief Executive Officer David Chapman said sales and earn-

by filling in the gap between the VAX 8600 and 8800. And their research Caution is the watchword for efforts to improve the transaction processing capabilities of the VAX and Vaxcluster will be of particular interest in banking," Mikita said. semiconductor investments Schulman noted that of all DEC CPUs, the VAX 8600 and 8650 fur-

ACTIVE ISSUES Kathy Poneus

the expense of minicomputer rivals IBM, Hewlett-Packard Co. and DG. mid the wreckage of semi-HP is in a major transition, IBM is trying to rationalize its mid-range od DG is still trying to get into the year lows, there are few salvage mmercial arena," Dean Witter's evens said. "DEC's three leading able investment ideas. Some analysts suggest avoiding the entire group, whereas others recommen spetitors are in transition, and major companies like Intel Corp. (INTC — 19), Motorola, Inc. (MOT that might not occur again in this

-35%) and Texas Instruments. Inc. (TXN — 109%) for long-term investments. But what about the saller specialty semiconductor

Both large and small capitaliza tion semiconductor companies have been hurt by overall industry trends, including a declining boo to-bill ratio, computer industry dol-drums and flat or declining order rates. But "because smaller niche or specialty companies depend largely on one product or one market segment, "says John Geraghty, vice-president with First Boston Corp. seir business may swing more p itively or negatively than the over-

As an example, Geraghty cites Mosolithic Memories, Inc. (MMIC — 1214), a maker of bipolar large-scale integrated semiconductor emory and logic circuits. Gernds purchas

all industry trend.

of Monolithic, says the company's programmable array logic circuits are selling well. Owing to licensees the company is also less exposed to foreign competition, Geraghty says Throughout this prolonged re-cession, Monolithic has shown weakness but has not reported a loss. Geraghty estimates Monolith will earn 50 cents per share in fis-cal 1986, ending Sept. 30, and 95

in fiscal 1987 The leverage of these smaller companies is so tremendous that it is difficult to forecast earnings." acknowledges Paul Johnson, ana-

Porteus is president of Strand Re search Associates, a Centérville, Mass-based company that provide customized research services for financial and high-tech firms

lyst with L. F. Rothschild, Unterlithic will earn \$1 per share in fiscal 1987. Considering current market conditions, Monolithic has "done a great job," Johnson says.

Geraghty likes is Standard Micro systems Corp. (SMSC - 13%), which produces standard and cus-tom metal oxide semiconductor in-tegrated circuits. "The company is lovesting a fair amount in research and development and has good new products," Geraghty asys. Eli Sayegh, analyst with S.G.

Warburg & Co., advises investors to avoid everything at this stage. Although the bulk of damage has already occurred, Sayegh says, "you're not going to see any ne term performances, so at best,

you'd be sitting on dead money."
Sayegh concurs with other ana lysts in saying that Monolithic will continue out-performing the indi try. But in addition to moving in sympathy with other semico its stock price has dropped, Sayegh says, because in vestors have begun anticipating weakness in the firm's programma

ble array logic business, which will cause lower earnings expectatio Savedh calls both Monolithic and LSI Logic Corp. (LLSI - 9%) exa ples of "profitless prosperity." According to Sayegh, LSi's sales continue to grow nicely, but margins remain under pressure and are es-

sentially break-even. Rothschild's Johnse neutral oo LSI because of its limit near-term earnings visibility. How-ever, he praises the company for its icustom product portfolio, strong management team, global diversification strategy and solic cash position.

James Bariage, vice-president of Smith Barney, Harris Upham & Co., a voids second-tier semiconductor companies because the stocks are still pretty fully priced even given the correction we've seen Barlage also considers the nich

strategies of companies such as In-tegrated Device Technology (IDTI — 7%) and VLSI Technology, Inc. (VLSI — 9 1/4) a disadvantage because "such strategies provide virtually no flexibility in the event logy changes or competition

Sun revenue rises in fourth quarter

Resembly Hamilton MOUNTAIN VIEW, Calif. — While

many large system veodors recently reported sluggish earnings, worksta-tion vendor Sun Microsystems, Inc.

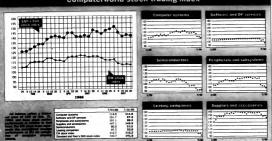
last week reported a whopping 82% increase in revenue for its 1986 fiscal year and a 106% revenue increase for the fourth quarter ended June 30. Sun reported year-end re-\$210.1 million, up from \$115.2 mil lion in its 1985 fiscal year. Net income for the year was \$11.9 mills or 45 ceots per share, up from \$8.5

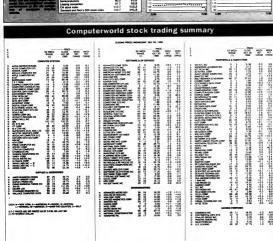
n, or 36 cents per share.

For the fourth quarter, Sun report-ed revenue of \$76.7 million. Its quar-terly net income of \$5.9 million was a 181% improvement from a year ago. Per-share earnings increased to 21 ts per share, from 8 cents per share in 1985's fourth quarter. Sun last week also announced a three-year, \$60 million OEM agree-ment with UK mainframe vendor inonal Computers Ltd., which will base all of its future workstation

products on the Sun-3 line

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COMPUTER INDUSTRY

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INSTANT

they are import-

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Secretary Main Buildring the U.S.-Ja

DEC finishes record year

Soaring profits, sales reveal commercial MIS success

By Clinton Wilder MAYNARD, Mass. — In results that reflect

growing market share gains in the commercial MIS market, Digital Equipment Corp. last week reported 38% earnings growth on a 14% rise in

reported So's earnings growth on a 14% rise in revenue for the fiscal year ended June 28. DBC ended its year as the industry's success story with a particularly strong fourth quarter in which profits soared by 136% to \$238.6 mil-lion, or \$1.81 per share. Fourth-quarter sales immed by 17% to \$2.12 billion. jumped by 17% to \$2.17 billion.

Against a backdrop of disappointing results om rivals like IBM and Data General Corp., DEC posted fiscal 1986 profits of \$617.4 millio or \$4.81 per share, on revenue of \$7.59 billion. in fiscal 1985. DEC earned \$445.7 million. or \$3.71 per share, on sales of \$6.68 billion

According to DEC and its observers, the com See DEC page 100



All don't walk to IBM's beat

I s IBM truly the industry's financial beliwether? The conventional Wall Street

wisdom certainly says yes, with the typical "Seli-off in technology stocks led by IBM" headlines indicating sheeplike behavior among big-block stock traders. Analysts pointed out that on IBM's black Monday three weeks ago, major selling of both Digital Equipe Corp. and NCR Corp. shares caused those stocks to drop even more, per

centage-wise, than Big Biue's. While a few litters about DEC's stock price volatility during the current DEC boom are understandable, it seems hard to defend a 2.9% drop in NCR stock on

the day it announced an 18% secondquarter earnings increase The computer industry bears obvi-ously believe that IBM's current fiscal

struggles are bad news for all the play ers in the field. Their logic is simple. Since the industry leader is in a slump that indicates bad times for the entire industry. Conversely, if one starts from the assumption that the industry is sluggish, what better evidence is then than Big Blue's lackluster performance But there is indeed an answer to this

rhetorical question — several answers, in fact — such as Burroughs Corp., DEC, NCR, Microsoft Corp., Computer Associates, Inc., Apple Computer, Inc., ent Science America, Inc. Tandem Computers, Inc., Stratus Computer, Inc., Compaq Computer Corp. and even Storage Technology Corp

See ALL page 80 Wilder is Computerworld's senior editor, computer industry.

Swift action lifts CDC peripherals

ANALYSIS By Doona Ralmond!

MINNEAPOLIS — Lawrence Perlman
faced a dausting task when he took over
as president of Control Data Corp.'s Data
Storage Products Group in early 1985. The
peripherals division, long a corporate cash cow, had taken a "The Japanese understand now . . that they simply can't go on exporting more than

sudden and dangerous nosedive and was taking all of CDC with it. "I did not have an extended opportunity to sit back and analyze the business and then decide decisions started at 8 a.m. the

first morning I took over. Analysts now credit Perlman's swift and drastic measures with

saving what was once the most profitable part of CDC. The peripherals division re-cently posted a slight second-quarter profit for the first time since Periman took over, and CDC as a whole is now exp to return to the black by the end of this

around, Perlman first acknowledged that the peripherals market was softening, which was leading to order cancellations.

He quickly put the brakes on runaway pro duction of inventory that was destined to sit in warehouses. Those actions and others that Periman instituted helped ste the tide of the huge losses CDC experienced last year, says Gary experienced last year, says Gary
Blauer, computer and technology
analyst at Dain, Bosworth, Inc. in
Minneapolis. "The slight profit
this year, probably only a few
finam million dollars, is a milestone,"
he says. "What remains to be
een is if the company will make continued

the slide in CDC's storage business. The low-end portions of the fixed disk and

Compag beats odds; micro downturn grips AST Research

By Clinton Wilder
Campaq Computer Corp. contin-ted to outrun the sluggish and crowded microcomputer industry in results announced last week, but the slump caught up to add-on board maker AST Research, inc., which reported a 39% earnings

Houston-based Compaq, leverag-ing its success at the high end of the IBM Personal Computer-compatible market, said profits rose 70% from year-earlier results for the second quarter ended June 30. Compaq earned \$9.6 million, or 31 cents per on revenue that climbed 24%

Compaq President and Chief Exec-utive Officer Rod Canion said sales of

patible Deskpro 286 have so far bee insulated from the price pro Asian-made clones. 'Our latest market

owed that price is eighth on the list of factors that business users consid-er in purchasing that class of ma-chine," Canion told Computerworld. They're going for performance, the

name of the supplier and reliability."

Canion also noted that Compan reains committed to the dealer channel, despite the turmoil and bankruptcies in the retail microcomputer market during the past year. "The majority that have gone away were not our authorized dealers anyway,

Calif. lawmaker postpones effort to legislate computer warranties

Maura McEnaney SACRAMENTO, Calif. — A state Assembly bill seeking explicit war-ranties on computer hardware and

software products died in committee recently, after the bill's sponsor agreed to let vendors voluntarily opt industry-suggested warranty Los Angeles Assemblywoman Glo-

ris Molina last month did not request an Assembly vote on Assembly Bill (AB) 1507, which required computer vendors to guarantee, among other things, that products perform as ad-

Molina's decision to let the bill die followed efforts by ADAPSO to let its members adopt self-imposed warran-ties that offer stronger consumer

A spokeswoman in Molina's office said the assembly woman will refile the bill next year if vendors fail to increase warranty protection. going to walt and see what ADAPSO spokeswoman Jane Winder

Although software companies gen-erally will take back and fix faulty versions of their software, ma companies employ "as-is" warrantie that require users to accept the prod

AB 1507 was opposed by many is sitry representatives who argue dustry representatives who argued the bill would increase the cost of imputer products and, in some cases, hinder growth of small entre neurial companies.

"Our position was there was no See LANNEAUER page 82

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